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The Silchester Region in the 5th & 6th centuries A.D.

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UNTIL a few years ago it was customary amongst many historians to suppose that the towns of Roman Britain ceased to exist in or very soon after A.D. 410. Records such as that of Pevensey, admittedly a fort rather than a town, which was not taken until A.D. 491, had always suggested a modification of that view, and more recently efforts have been made to demonstrate that life of some sort continued unbroken in certain of the towns throughout the Dark Ages. Dr R. E. M. Wheeler has argued thus particularly in the case of London (1).

The problem is complex and may well be insoluble. The literary evidence has already been strained to the uttermost, and the results of archaeological exploration are likely to be meagre. For the sites in question are mostly now either entirely deserted or completely covered with medieval and modern buildings. In the case of the former constant ploughing one hundred years ago, even if not before or since, has normally disturbed the uppermost strata, which might yield the required evidence; in the latter similar destruction will almost certainly have been wrought by the foundations or basements of the later buildings. Nevertheless in spite of the difficulties inherent in the study it should be attempted on as broad a basis as possible. Mr J. N. L. Myres has pointed out (2), however, that before this can be attempted with any degree of finality regional surveys must be made which will perhaps later form part of a general historical pattern.

The present writer had occasion recently to study the topography of Silchester in Hampshire, the Roman town Calleva Atrebatum. Certain features of the countryside, both natural and artificial, together with the fortunate circumstance that the whole town has been excavated, give an opportunity, nowhere else as yet available in Britain, for attempting such a survey as Mr Myres envisaged. Moreover Mr Myres's own work on the era of Saxon conquest, and his clear and clever course between certainties and possibilities, lend just the encouragement needed by those who grope their way forward from the comparative light of the Roman period.

It is, of course, unfortunate that the excavation of Silchester took place before the evolution of all those scientific methods of which the present generation is so proud.

[1] *London and the Saxons*, London Museum Catalogue, 28 ff.

[2] *Roman Britain and the English Settlements*, 2nd edition, 429.

The reports, therefore, do not tell as much as could be wished, but in the present enquiry it is doubtful whether this affects the evidence in the slightest degree; for, as already mentioned, the uppermost levels of sites of this character, such as Richborough, even when most carefully dug, seldom yield stratification of scientific value. The evidence from the excavations must depend, therefore, entirely upon the objects recovered during the work. Even here disappointment is in store; for many of the Silchester finds still repose in Reading Museum, inadequately published or totally ignored. The pottery received masterly treatment from the late Thomas May, and Mr J. W. E. Pearce has worked nobly to fill a gap in the earlier publication of the coins, but the bulk of the rest of the finds has yet to receive scientific treatment.

The foremost object amongst the available material for the present purpose is undoubtedly the stone inscribed with Ogam script, found in a well in 1893. It does not seem that this can be dated closely (3), but it must have been erected in the fifth or sixth century A.D. Mr O. G. S. Crawford has envisaged it (4) as a possible memorial of a pilgrim from the west travelling eastwards, perhaps to Rome, but overtaken by the turmoils of the Saxon invasions. There can in any case be no doubt, as he states, that the most direct course overland for pilgrims to Rome from Wales and Ireland lay along the Roman road from Abona on the Bristol Channel *via* Bath, Marlborough, Silchester, London and Canterbury to the southeastern coast. How long after the Roman evacuation this route remained in use cannot be deduced from the evidence available in the lives of the saints; but the presence of the Ogam at Silchester does suggest that it was still at least partially in use sometime after A.D. 410.

Perhaps the most important evidence for this study from the Silchester finds is that provided by the coins. Nearly 9000 Roman coins were found during the excavations completed in 1909. Mr J. W. E. Pearce has carefully examined and listed 6367 of them (5) and an unusually high proportion belong to the latest issues of bronze coins, which were struck in the western provinces of the Empire, i.e. those of A.D. 388–95. Moreover of the 405 coins, which can be attributed to this period, no less than 311 are so worn that they cannot be attributed to emperors; but they can be certainly referred to this period by their reverse types. The question of the wear of coins is a debatable one, but this seems to be a clear case for its use as an argument. It suggests that the coins found there are not the remains of hoards distributed in the soil by the plough since deposition and so recovered individually, but were definitely lost one by one during circulation. The conclusion is that the town continued to exist in the fifth century, and that the coins continued in use there, no doubt in ever diminishing quantities. Of no other Romano-British town can this yet be stated with confidence (6), although it is likely that the study of the coin evidence from Cirencester will yield a similar result (7).

The evidence of the coins is supported by that of the pottery, which has been carefully studied by the late Thomas May (8). He illustrates and describes very many vessels or potsherds, which he attributes to the late fourth or to the fifth century, notably

[3] The writer is indebted to Prof. Ifor Williams for the following opinion. From a perusal of photographs and published references he is inclined to prefer a date *c.* A.D. 450 for this inscription, but he points out that an examination of the actual stone might cause him to modify this view.

[4] *Western Seaways* (in *Custom is King: essays presented to R. R. Marett*, London, 1936).

[5] *Numismatic Chronicle*, 1929, pp. 328–32.

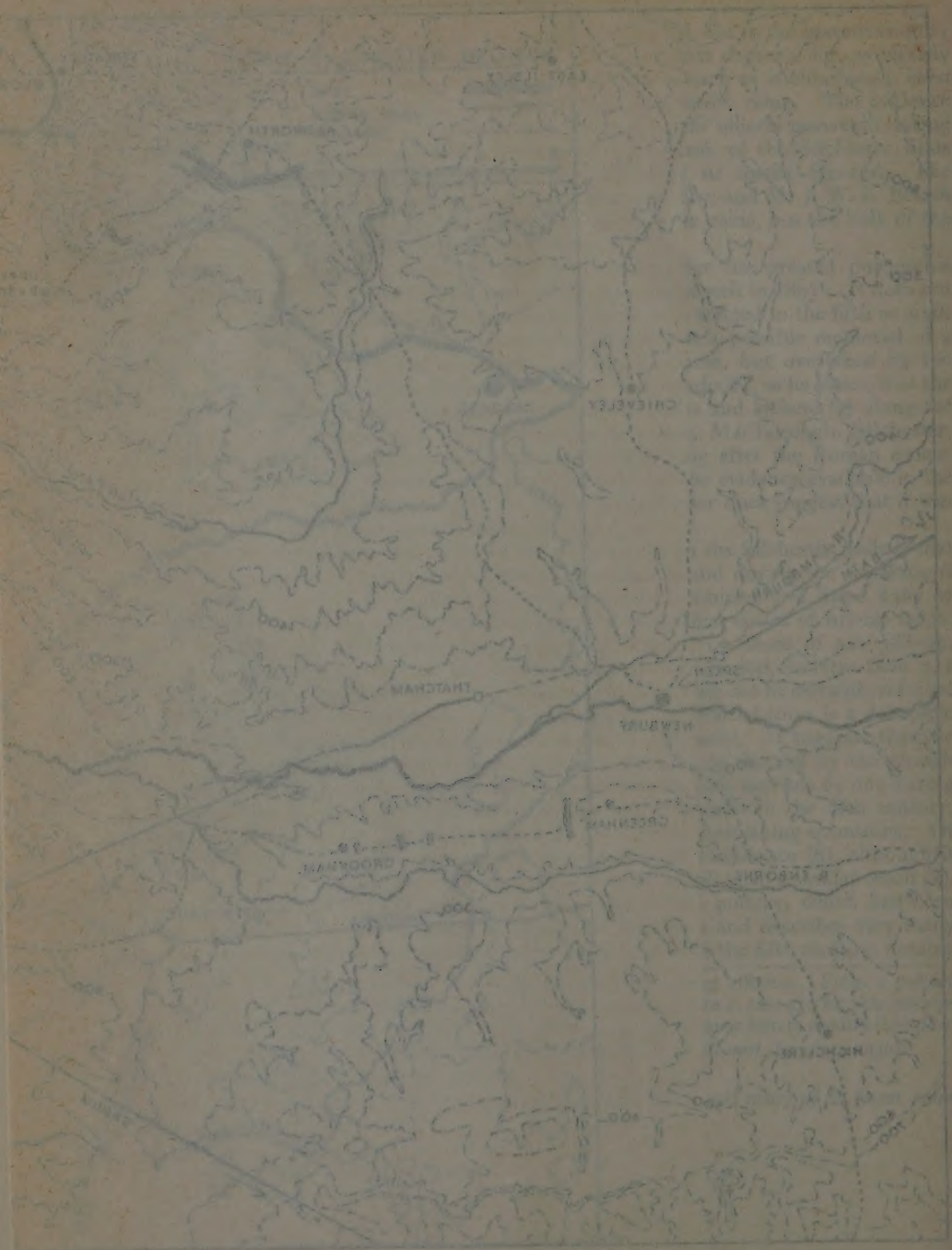
[6] *Arch. Journ.*, XCII, 65–8. Richborough is a fort not a town, and many of its latest coins may have come from dispersed hoards.

[7] *Numismatic Chronicle*, 1929, pp. 332–4.

[8] *The Pottery found at Silchester*, 1916.

THE SILCHESTER REGION
DYKE
ROMAN ROAD
TRACKWAY
MILES 0 1 2 3
EAST ILSLEY
STREATLEY
GORING
ALDWORTH
UPPER BASILDON
PANGBOURNE
R. THAMES
READING
CHIEVELEY
R. PANG
DORCHESTER
R. LAMBOURN
BATH
SPEEN
THATCHAM
NEWBURY
PADWORTH
GREENHAM
CROOKHAM
R. ENBORNE
SILCHESTER
LONDON
HIGHCLERE
SARUM
WINCHESTER
R. LODDON
500
400
300
200
600
700

facing p. 114



most of those in plates LI to LVII. It must be allowed that his suggestion of a fifth-century date in particular cases, even for the rosette-stamped ware of plate LVII, is prophetic rather than probable, but the very profusion of such pottery at the site is sufficient with the coins to show that Silchester, like Richborough and Pevensey, was well peopled in the late fourth century and probably also for some time after A.D. 400. One vessel in particular can be closely paralleled in shape by another elsewhere, which contained a coin hoard of *c.* A.D. 400 (**9**), and one sherd is very similar to a vessel from an occupation layer at Bourton-on-the-Water, which must be of the same period (**10**).

The soil of Silchester has also yielded certain disc-brooches, ornamented with Celtic design. Their date is still a matter of dispute, although they are now usually assigned to the late Roman period. Mr E. T. Leeds has reasonably argued (**11**) that they fall into line as part of the revival of Celtic art at that time and after the Roman evacuation of Britain. This seems now all the more reasonable in view of the arguments already adduced from the other finds at Silchester.

Finally there is the church (**12**). As a Romano-British church it is unique, but in assessing the relevance of this fact it must be remembered that Silchester alone of the Roman cities of Britain has been completely excavated, and that its nearest rival in this respect, Caerwent, also contained a building which may have been a church (**13**). Nevertheless it is true that contemporary churches are exceedingly rare in Gaul (**14**). General considerations forbid a date for the Silchester church before the Peace of the Church in the early fourth century, but thereafter, it is likely enough, from what is known generally of western ecclesiastical organization, that one existed from an early date, as the seat of a bishopric in the *civitas*. At least by the end of the fourth century there must have been considerable Christian communities in Britain; for the history of Pelagius and his heresy suggest that the faith had progressed far, at any rate in the towns, by A.D. 400.

The structure of the church was not dated archaeologically by the excavators. But, as it seems to form part and parcel of the general lay-out of the town, whereas the possible example at Caerwent was obviously the latest of several buildings on the same site, at variance with the normal plan of the town, it may confidently be placed within the fourth century. It is indeed likely to have been in existence at least by A.D. 350. The church contained a mosaic pavement, which showed signs of considerable wear in one part. Moreover there was a suggestion that some of it had been concealed during the use of the building by a new floor of *opus signinum*. It is perhaps permissible, therefore, to put this evidence beside that of the wear of the many late coins found in the town.

Thus far the evidence from the soil of Silchester itself leads to the very plausible suggestion that the town was indeed the abode of a civilized society during much, if not all, of the fifth century. Mr Myres has indeed suggested that an influx to some towns of refugees from the country may have given a new impetus to town life, even if it lasted for only a brief time (**15**). It is now time to turn to the complementary archaeological material, namely that of the Saxon invaders themselves, to see how far and at what

[9] ibid. pl. LII, 90 and 89 (Bobs Mount, Reading).

[10] ibid. LXXXII B and *Trans. Bristol and Gloucs. Arch. Soc.*, LVI, 113–5.

[11] *Celtic Ornament*, 1933, 139–43 and fig. 36a.

[12] *Arch.* LIII, 563–8. [13] ibid. LXXX, 235–6.

[14] Clapham, *English Romanesque Architecture before the Conquest*, 9–15.

[15] op. cit. p. 431. Mr Crawford suggests to the writer that Cilchester, the 13th–14th century form of Silchester in the Close Rolls, may indicate a survival until a comparatively late date of the name Calleva.

period their progress towards the area of the Roman town is attested by their settlements. The evidence has been marshalled both on the Ordnance Survey map of Britain in the Dark Ages, and more fully by Mr Myres in the work already cited.

It will be as well briefly to summarize the progress of the Saxon invasions and conquest in the southern half of Britain, as set forth by Mr Myres (16), remembering always that his views are based not upon the literature or upon the contents of cemeteries or upon place-names alone, but upon a reasoned valuation of all these sources of information. The story may reasonably begin with the settlement of Saxon bands under Hengist and Horsa in Kent as *foederati* in the middle of the fifth century (17). After a period these peoples extorted by force or by threats more land in Kent and perhaps also some in Essex and Middlesex. At the same time Aella and his Saxons appeared on the Sussex coast, and thereafter under his leadership widespread raiding and destruction took place, accompanied perhaps by settlements placed by the men of Kent in the Isle of Wight and the adjacent coast of Hampshire. It is unlikely that these settlements occurred before the early years of the sixth century A.D. (18). After a period of confusion the Britons were roused, and, ably led by Ambrosius Aurelianus, succeeded in inflicting a heavy defeat upon the invaders at Mons Badonicus. The site of this famous siege will perhaps never be known, but it is reasonably certain that it took place between 490 and 516 (19). After this reverse the Saxons seem to have been forced to give up indiscriminate raiding, and to turn their attention rather to an intensive occupation of the lands on which they had already settled.

Meanwhile there had been a considerable penetration into, and settlement upon, the banks of the Upper Thames and its tributaries from Goring northwards. There is little doubt that the area was ' full of Teutonic immigrants by the beginning of the sixth century ' (20). Much has been written about the origin of these settlers and about the district from which they migrated to the Oxford region. Mr Myres, whilst refusing to rule out the possibility of penetration up the Thames itself from its mouth, seems really to lean towards Mr E. T. Leeds's explanation that the tendency of the migration was in the first place along the Icknield Way from Cambridge and ultimately from the Wash (21). He is troubled particularly by the fact that, although early cemeteries occur along the Icknield Way as far southwestwards as Bedfordshire, they are conspicuous by their absence further along the supposed route, namely in Buckinghamshire and eastern Oxfordshire. His suggested explanation is of particular interest in the present study, as will appear below, and may perhaps be considered thereby to be the more plausible. There is evidence that this area, which is devoid of early Saxon remains, was then still largely inhabited and controlled by Britons, and indeed remained so for many years to come. Yet it is permissible to think that bands of Saxons were granted a free passage along the Icknield Way by the local inhabitants on condition that they themselves were not molested (22).

It is now necessary to consider how Silchester and its region may have been influenced by the invaders. It may never become certain which of the towns of Roman Britain, till then still flourishing, were destroyed according to Gildas during the troubles which preceded the British revival and the success of Mons Badonicus. As has been shown from the Roman evidence, there is reason to suggest that Silchester existed as a town, that is an entity of some importance, well on in the fifth century, and no evidence

[16] ibid. pp. 381–2. [17] ibid. p. 356. [18] ibid. p. 365.
[19] ibid. p. 379. [20] ibid. p. 395. [21] ibid. pp. 406–7.
[22] In our own day we have witnessed the passage of troops through ' neutral ' countries on just such an understanding !

was found during the excavation of its violent destruction. Even if the site of Mons Badonicus and of the other battles which preceded it were known, it would still not be possible to say for certain that Silchester escaped unharmed throughout the campaigns. The most that can be suggested by this line of argument is that it lay directly on the road between London and the strongholds of the invaders and the west, where must have been the strength of the Britons at the time. It may be supposed that, if it still had any value to them, the Britons would make an effort to retain it in their hands.

With these suggestions and arguments in mind one may turn to maps VI and VIII in Mr Myres's account (**23**), in order to ascertain from the pattern of known settlement areas and assumed natural conditions of forest and swamp in which direction the potential threat to the town's continued existence lay. On the east of Silchester from Reading southwards there is a broad belt of low-lying country, the valley of the river Loddon and other tributaries of the Thames, which appears to have been thickly forested and therefore uninviting to early settlers. It is indeed a region which is likely to have been a safe retreat for British refugees (**24**). Moreover the whole line of the Roman road to London has on or near it hardly a trace of early Saxon settlement. The Saxons, who used the Thames itself as a highway above Chertsey, hardly penetrated beyond its actual banks (**25**). Similarly to the south and west of the town signs of settlement, although they exist here and there, are very few within a wide area.

Towards the north and northwest, however, it was only a short distance to that intensive area of early Saxon settlement from Goring northwards, to which reference has already been made. It is perhaps significant that the Roman road from Silchester to Dorchester has so completely disappeared, that very little of its precise course is now known ; it is permissible to argue from this that the two towns from very early times were in rival hands, and that there was no communication between them. Another symptom of the threat from the north to the peace of Silchester and its region can be seen in the well-furnished cemetery at East Shefford, not many miles northwest of Newbury. Clearly the invaders were pressing from that direction at an early date. Whether this was a fruit of the era of expansion in the late fifth century before the British revival, or was the result of peaceful penetration after the siege of Mons Badonicus, may never be known (**26**).

The purpose of this article is to establish a case for the continued existence of Silchester as a town, or at least the continued existence of a Romano-British enclave in its vicinity, as an organized community, which alone or in concert with others of its race was strong enough to defy the invaders. There seems to have been no constant danger from the east, from the south, or even perhaps from the west, but northwards potential danger lay close at hand. Clearly no authority of any standing could afford to ignore the threat. If, therefore, it can be shown that it was recognized as such and combated with success, or at least that some measures were taken for real or supposed security, strong support will be forthcoming for the arguments put forward.

Although a number of distinguished archaeologists have added materially to the knowledge of the linear earthworks of Britain, and Mr O. G. S. Crawford has been indefatigable in tracing many little known examples, it still remains the truth that they

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[23] op. cit. pp. 358–9 and 392. [24] ibid. p. 406.

[25] The name Reading and the cremation cemeteries there are the early Saxon elements nearest to Silchester, but it seems unlikely that there was early penetration thence towards the town.

[26] It is noticeable that scarcely any traces of the Saxon invaders have been found in the Kennet valley, v. Peake, *Archaeology of Berkshire*, p. 129 and map V, p. 157.

are the least known class of the country's visible antiquities. This is the more unfortunate, because excavation, where so far undertaken with success, has usually shown that they belong to sub-Roman or Saxon times. A complete study of the extant examples might, therefore, be of considerable assistance in the elucidation of the problems of the Dark Ages.

A recent successful excavation at one such earthwork, on Greenham Common near Newbury, Berkshire (27), has led the present writer to the survey of others of the kind in the district and has indeed prompted the whole of this article. Mr Crawford, who knows the district well, has been kind enough to lend his maps and to give much assistance in other ways. Few fresh discoveries have been made, except for minor adjustments to the plans as given on the maps, but a logical and perhaps correct interpretation of the earthworks may now be attempted.

The longest of the linear earthworks near Silchester is one which bears the familiar name Grim's Bank and runs from Little Heath, one mile southeast of Aldermaston Court, for 2½ miles south of Padworth in a northeasterly direction, ending now in Pennsylvania Wood, Ufton Park (28). At its present southwestern termination both bank and ditch end abruptly in open heath land, and there is no sign whatever that they ever continued further. There is indeed a large, very shallow depression close to the end of the bank, which might be interpreted as the remains of a hut. At a distance of 80 yards to the southwest there is the well-preserved camber of the Roman road from Silchester westwards to Speen, Bath and Cirencester. Mr Crawford has traced the line of this road for many miles, and it is now established that this was the correct line in preference to the traditional line of the older O.S. maps, due west along the county boundary. The conclusion seems inescapable that Grim's Bank was sited to take account of the Roman road.

For most of its course the bank and ditch of Grim's Bank are well preserved. The ditch is always on the northwestern side and the bank stands sometimes at a height of 8 feet vertically above the bottom of the ditch. The alignment is throughout in straight stretches, but there is a gap immediately west of Padworth Common, where natural features seem to have rendered artificial works unnecessary. Towards its northeastern end the course of the earthwork is incorrectly marked on the O.S. map. It ends at a short piece of camber, apparently part of the Roman road from Silchester to Dorchester.

It is thus seen to run from one Roman road at a point where the latter crosses boggy ground, as is attested by the presence of Decoy Pond and other such features, to another, which passed northwards from Silchester not far from the edge of a small valley, wherein it may be presumed, lay part of the forested area of the Loddon valley. Between these natural obstacles it lies about midway between the Kennet valley and the town of Silchester, facing away from the latter. The obvious conclusion, especially as it was based upon two Roman roads, is that it was built whilst the Roman town was an important centre. As it would have served no useful purpose known to science during the Roman period, it must reflect some activity of the inhabitants of the town or district after the evacuation of A.D. 410 (29).

Although in the country close to Silchester this Grim's Bank 1 is the only earthwork of the type which seems to be related to the Roman town, there are three others close

[27] *Arch. Journ.*, C. (forthcoming).

[28] This and the other earthworks here mentioned have been fully described in ANTIQUITY, 1943, XVII, 188–95.

[29] It can be shown, from surface observation, to be later in date than a promontory fort of Early Iron Age type, loc. cit. 192.

to it, which appear to be part of the same series. The northernmost of these, Grim's Bank II, runs in a straight line for over half a mile from the edge of a gully just south of the eastern end of Grim's Bank I to near Island Farm, Ufton Common, a quarter of a mile southeast of Ufton Nervet. At its western end a gap in the Bank was probably left for the passage of the Roman road, although this has not been proved, and a short bank running northwards appears to connect it with Grim's Bank I.

South of this earthwork another straight bank and ditch run also from the edge of another gully through Park Piece and Gravelly Piece ; its eastern end is now uncertain. Apparently as an afterthought, or as the result of changed circumstances, this bank was extended westwards to end on the Roman road from Silchester to Dorchester.

Finally just west of Mortimer Common there is the third straight earthwork of this series. Its eastern end rests upon the head of a small valley, and, although its western end has been destroyed, it is probable that it rested there also upon a similar natural feature.

It has been suggested elsewhere (30) that these three straight banks, since they do not refer directly to Silchester, may have been concerned with a settlement at Mortimer West End. Of such a settlement there is no direct evidence in Roman times, but Bronze Age barrows in the vicinity suggest earlier occupation, and the district may well have been a desirable one for habitation. If this suggestion is correct, then the focus of population, etc., with which the present paper is concerned, should be taken to include not only the Roman town itself, but also at least one other populated place. Other such villages are indeed likely near a great town, and it can easily be imagined that they might continue to exist for a time during or even after the decay of the town.

The existence of these linear earthworks (31) provides precisely that evidence of an awareness in the region of Silchester of the danger from the north and northwest which was put forward above as the criterion of its existence as an organized community in the late fifth century or even later. It is legitimate, therefore, to proceed further, in order to ascertain whether other similar earthworks in the locality or further afield supply corroborative evidence. Meanwhile it will be noticed that they lie in precisely the same relation to the country northwards as does Wansdyke further west.

Far away to the northwest another Grim's Ditch, carefully traced by Mr Crawford (32), runs for some two miles across a broad ridge south of Aldworth from the head of a valley leading down to the Thames, one mile south of Streatley. Its western end is uncertain, but it may have lain on the edge of a combe at the head of the river Pang, southeast of Compton. This earthwork, like Grim's Bank near Silchester, faces northwards and northwestwards against the invading Saxons and lies astride the main Ridgeway which crosses the Thames at Pangbourne (33). Another similar short earthwork lies also to the south, near Upper Basildon. It is tempting to suggest that they precede the Silchester earthwork in date, and mark a time when much of the land between the Thames and the lower valley of the Kennet remained under British control. There are, as it happens, few traces of early Saxon life on the right bank of the Thames

[30] loc. cit. 194.

[31] In the absence of archaeological proof they may be dated to this period tentatively by comparison with similar works elsewhere (e.g. Wansdyke).

[32] ANTIQUITY, 1931, IV, 162–4.

[33] It lies just south of an alternative route for the Ridgeway, i.e. from Aldworth to a crossing of the Thames at Goring, the very spot which seems to have been the southernmost point of the intensive early Saxon occupation. It also lies astride what may have been an early route from Goring to Newbury.

between Goring and Reading. A short earthwork of the same kind, close to the Thames south of Streatley, seems to bar the way along the Roman road from Dorchester to Silchester (34).

Finally there is the linear earthwork on Greenham Common, two miles southeast of Newbury, and its companions on Crookham Common two miles further east. The former has been shown by excavation to be sub-Roman (35), and the latter are likely to be of the same date (36). As they face away from Silchester, albeit at some considerable distance from that town, it seems permissible, indeed logical, to include them as part of its outer perimeter. The difficulties are, however, twofold. These earthworks both face westwards, from which direction there is no hint on the maps of Saxon penetration of any appreciable threat to security, and, although they cross a ridge, which has on it an ancient trackway, there is no evidence that it was officially in use as a route in Roman times.

The second difficulty is the less troublesome of the two and will be dealt with first. Grim's Ditch in the Aldworth district and Grim's Bank, Padworth, are here provisionally regarded as successive frontiers of the British enclave centred on that Roman town. Undoubtedly, whilst Grim's Ditch marked the boundary, the Roman road through Aldermaston Park to Thatcham and Speen could safely be used at all normal times. But, if it is supposed that continued pressure by the Saxons caused a restriction of the British area to the land south of the Kennet, that road may well have fallen out of use, to remain in the obscurity, from which Mr Crawford only recently rescued it. Then an alternative route may have been used, probably not for the first time (37), which ran due west from Silchester (as the county boundary now runs), to a ford on the river Enborne, and thence continuing along Crookham Common and Greenham Common. It would be natural, therefore, to put a barrier across this road in the supposed later phase of the sub-Roman period in the Silchester region.

In order to deal with the major difficulty of the interpretation of the Greenham Common earthwork, namely the fact that it faces westwards, towards what must be presumed to have been the friendly western parts of England, it is necessary to consider the natural lines of communication in the district. The importance of Silchester in Roman times must have lain largely in the fact that from it roads ran in five important directions, to Winchester, to Sarum and the southwest, to Bath and the west, to Cirencester and South Wales, and to Dorchester and the Midlands. Only in the case of the last of these was there an alternative route from London; for the rest Calleva Atrebatum was to the inhabitants of Londinium what Clapham Junction is now to the Southern Railway—a distributing centre of traffic. Presumably in Roman times if a man wished to go from Sarum, or from Winchester, to Dorchester on Thames, he went *via* Silchester. In Saxon times Dorchester lay amidst the earliest settlements of the West Saxons, and it

[34] This portion of that road is reasonably certain.

[35] *Arch. Journ.*, C. (forthcoming).

[36] ibid. and O. G. S. Crawford in *The Antiquary*, 1915, p. 253, notes also three other similar dykes nearby.

[37] Various finds of Roman objects have been made along it, v. Peake, *Archaeology of Berkshire* under Brimpton and Greenham. A portion of this track is mentioned as a 'herpath' in the Bounds of Brimpton of A.D. 944 (*Cart. Sax.*, II, 802 in *The Antiquary*, 1915, pp. 250–4). As Mr Crawford points out (ibid. p. 250) this word indicates 'highway', but 'does not necessarily refer to a Roman road, rather the opposite. It seems to denote an important road, still in use, that had grown and not been laid out'. Its course is marked on the map in accordance with the evidence of those Bounds.

was there that the first bishopric of that people was founded. Similarly Sarum was an early focus of settlement for the peoples who entered the country *via* Southampton Water. The early relationship of these two groups of the later united people, who inhabited the area known as Wessex, is most obscure. If one thing is, however, certain about them it is that intercourse between them must have been frequent from very early days. In view of what has been said about the status of the Silchester region at this time the normal route for Saxons can hardly have lain through that town. Indeed, as already mentioned, the road thence to Dorchester is likely to have fallen quickly into disuse; for it is still uncertain precisely how it ran, at least in the southern part of its course.

A more likely route for this early intercourse seems to have been along a track which was both more direct and probably more ancient than the Roman roads. It runs north from Sarum, crossing the northern Hampshire hills at the Three Legged Cross just west of a series of prehistoric camps, thence past Highclere to the crossing of the Kennet at Newbury. North of Newbury a variety of alternatives may have been used, but the most direct passes through Chieveley and just west of East Ilsley. There is some evidence for the use of a route near this line in pre-Roman times as a line of communication (38). It is a commonplace that such a track must have continued in use by the native population during the Roman period. What is more likely than that it was a natural route for the invading Saxons, who were unable or unwilling for any reason to use the Roman road? It may be objected that there is no evidence on this route of early Saxon use. But in Buckinghamshire, as already stated, Mr Myres can point to a similar discontinuity of the evidence (39). There he is disposed to suggest the existence of a British enclave in that region, which was able to keep its own land, perhaps because the Saxons could find better homes elsewhere, but thought it prudent or necessary to allow free passag ı to invading bands of newcomers. That a similar *modus vivendi* existed in the Newbury–Silchester region is supported by the presence of the earthworks on Greenham Common and Crookham Common. They face towards what seems to have been a Saxon highway, the connecting link between the two early *foci* of the men of Wessex, and bar the way off that route towards the Silchester region

In the foregoing paragraphs an attempt has been made to collect and to interpret the available evidence for the condition of life in the Silchester region after the Roman evacuation of A.D. 410. The objects found in the town itself can certainly be claimed to argue in favour of its existence as a settled community until about the middle of the fifth century. The progress of the Saxon invaders, as attested by their cemeteries and by other evidence of early penetration, does not seem to have been at all threatening to the region before about A.D. 500. The potential danger lay not so much in the south and southwest, where settlement at first was comparatively slow and meagre, but rather in the north and northwest, the valley of the Upper Thames, the true cradle of the West Saxon people.

This is the evidence of the early cemeteries, and it is amply confirmed by the linear earthworks, which face in that direction away from Silchester. In this respect they

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[38] See especially Peake, *Archaeology of Berkshire*, map III (Early Iron Age) also *Trans. Newbury District F.C.*, VIII, 205–15 ('The Origin of Newbury'). The writer has adopted Mr Peake's site for the crossing of the Kennet, but is himself responsible for the line of the rest of the trackways marked on the maps. In present circumstances they can only be drawn in from the O.S. maps, and may not be accurate in detail.

[39] op. cit. pp. 407–8.

are paralleled closely by Wansdyke, which seems to represent the frontier of a well-organized power south of the upper Kennet and further west against an enemy advancing from the north. Wansdyke cannot be closely dated ; it may, in part at least, be as late as the battle of Deorham in 577, but, even if this were the case, it could not be argued with conviction that similar works further east would be as late in date. The period of early penetration, Gildas's period of destruction, before the British success of Mons Badonicus, must have been a time of confusion. Even where a British community maintained its cohesion well enough to define a frontier, it is doubtful whether the Saxons of the time would be minded to respect it or even to wait whilst it was drawn. For it must not be imagined that linear earthworks were a form of real defence. Normally they are too long to be constantly manned. Like their prototype, the Roman Walls, they must have been regarded as frontiers, which could be patrolled and behind which forces could be mustered. They argue some sort of settled authority on both sides, capable of reaching agreement on the initial definition of the boundary. Conditions of this kind can seldom have existed during the period of Saxon expansion in the generation before the battle of Mons Badonicus, but the resultant calm after that event (*c.* 490–516), when according to Gildas the expansion altogether stopped, must have been precisely the opportunity for their erection.

The conclusion is, therefore, that Silchester as a town appears to have been occupied until about the middle of the fifth century. After that date the archaeological evidence cannot be said to suggest the existence of urban life. On the other hand the presence of many linear earthworks argues the continuance in the same region of some measure of the old authority in a Romano-British enclave, perhaps an adjunct of London, to which town it seems to have been continuously linked by means of a main road. This suggestion is based upon the fact that all the other Roman roads from Silchester have disappeared entirely, leaving the town itself surrounded by wandering narrow lanes, which are calculated to mislead the traveller, who has no trusty guide. Early in the sixth century, when Saxon penetration came nearer to the town and resolved itself from plundering raids into orderly settlement, the Britons were still strong enough to define their territory to the north and northwest. They could not forbid communication between Sarum and Dorchester, just as at a later date Offa could not deny the river Wye to the Welsh, but they prohibited expansion towards their region from the point where that line of communication crossed their own road to the friendly west country. Later it seems that they lost the land north of the Kennet, but, although hemmed in more closely, they still were not entirely overcome or submerged and drew another frontier south of the Kennet. How long these conditions obtained it is impossible to say with any degree of conviction, but it seems unlikely that such an enclave survived as an independent unit after the campaigns of Ceawlin in the latter part of the sixth century. Whether it came to a violent end cannot be ascertained, but the arguments adduced by Mr Myres (**40**) for the gradual fusion in culture of natives and invaders in Wessex suggest that the transition of life and the final desertion of such a region as Silchester were gradual and bloodless.

The writer is indebted to Mr J. N. L. Myres and Mr C. F. C. Hawkes for assistance during the writing of this paper, and also to his wife, who was associated with him in the field-work leading up to it and discovered some of the earthworks.

[40] op. cit. pp. 446, 449.

The Ferry

by F. W. Robins

THE story of the ferry is, at the outset, the story of the boat. It begins with prehistoric man noticing that wood will float and possibly, from the riding of birds and small animals, that it will carry a burden according to its size and character. Observant and imitative, the human animal, in the childhood of the world, proceeds to experiment gingerly and doubtfully at first, boldly and confidently—perhaps in some cases too boldly and confidently, later. He mounts himself astride a log and propels it, probably at first with his legs, towards the opposite bank of the river near which he lives. On the other side lies a new world, with resources untapped, especially in the matter of food, which he is anxious to reach. Even in the middle of the 19th century Pickering (*Races of Man*) speaks of men in the tide waters of the Sacramento river crossing, standing on split logs.

Seabrook (*Jungle Ways*) relates a legend of the Habbe (West African cliff-dwellers) that their ancestors miraculously crossed the Niger on the backs of crocodiles. Since crocodiles are often mistaken for logs, there is more than a suggestion here that the crocodiles may have been, in fact, logs ! The now extinct Tasmanians used logs, as well as rafts or bark canoes, for crossing water.

An ingenious use of the log for river crossing by a patrol in Burma was related in the *Daily Sketch* (4 December, 1942). One end of a rope was tied to a tree and the other to a heavy log, which was then set afloat near a bend of the river. The river carried the log to the other side of the bend and held it. Using the rope as a grip, one of the men would get across the log, and fasten the rope to a tree before the rest followed. This made the crossing of course more of the nature of a ford than a ferry but the adaptation of the use of the log is of some interest.

In areas where wood is scarce, there is an adaptation to circumstances, as for instance on the Euphrates, where ' none but the richer sort and those with flocks to bring over use the ferryboats ' at Deir. Others cross on goat skins. ' You blow out your goat-skins on the river's edge, roll up your cloak and put it on your head, tuck your shirt into your waistcloth, and so embark, with your arms resting on the skin and your legs in the water. The current carries you down and you make what progress you can athwart it. On the other side, the goat-skin is deflated ' (1). In Albania, horses are taken over by naked men with inflated sheepskins hung in front of them, while passengers are accommodated on a hurdle with sheepskins lashed to it (2).

According to Barotse tradition, the first man crossed the river on a bundle of reeds (3) —the earliest form of Egyptian boat and one still used in East Africa. Nobody today, however, seems to risk floating to land on a millstone as did, according to legend, St. Piran in Cornwall, and St. Christina on Lake Bolsena !

The next step towards a ferry-boat is the dug-out canoe, which at any rate allows for a certain amount of impedimenta to be carried. A raft is even better, but so far as the author is aware there is no definite evidence of the use of a raft in prehistoric times. As

[1] Gertrude Bell, *Amurath to Amurath.*

[2] M. E. Durham, *High Albania.*

[3] Stirke, *Barotseland.*

an alternative to the method already mentioned, two rough dug-outs lashed together with withies and propelled by rude wooden ' ladles ' are used in Albania (4). In parts of South America the ' dug-out ' is still the primitive ferry boat. On the Sarda river in Nepal, the ferry boats are nothing more than hollowed out tree trunks (5).

The ferry takes the place of the ford where depth and current or a soft bottom make the ford impracticable. It does not and could not oust the ford in early times, where substantial burdens had to be carried, since it was much easier to take them across without unloading and reloading or providing a large enough vessel to take the loaded animals or vehicles as they were. In the case of really substantial rivers, however, fording places are few and far between, dangerous, or absent altogether, so that the only feasible method of crossing with a load where there is no bridge available is to provide a vessel large enough, and stable enough, to carry whatever means of transport may reasonably be expected to cross in the ordinary course of trade and intercommunication.

Ferries vary in their forms in various parts of the world or even in a single country. The most common form is the boat propelled by oar or pole, but rope ferries are of indefinite antiquity and widespread. On some Chinese rivers the ferryboats are of considerable size ; or they may be so small as to be inadequate for the tasks put upon them. In the *Geographical Magazine* for February 1942, there is a graphic description of a crossing of the Yangste river.

' First we interviewed the two ferrymen, who live in a cave just above high water-level, and arranged the crossing for the following day. . . . Our crossing of the Yangtse was lengthy . . . the ferry boat was small and the current swift ; two mules and half a dozen people made a complete load. After the passengers had embarked, the boat was poled and towed upstream close inshore, till at a certain point the man with the tow-rope leapt aboard and away the boat swung into midstream, carried along and down by the current. Furious rowing brought it ashore in a little cove with a rocky staircase ' (6).

Between the departments of Ningpo and Shaouhing a free ferry was provided by the benefaction of the gentry and merchants of the two areas, which existed, at any rate, in the middle of the 19th century. Possibly this was as recognized a form of beneficence as the building of bridges and the devout Oriental's gift of water to the poor. Frequently in the Far East the main road is interrupted by a ferry crossing over a river of size.

The rowing-boat ferry is usually a passenger service only. In Lapland, the passenger himself may be the ferryman ; a boat left on the bank of a lake is taken across to the other side, where there is a second boat which has to be brought back to the starting point. The passenger then rows the first boat over again and leaves it on the other side. ' Everyone who travels in the mountains of Lapland thinks of the man who will come after him ' (7),—an excellent idea which might well be copied elsewhere.

Poled ferry-boats, however, may be used for quite considerable burdens. In the Abor country, where there are no bridges, the main river is crossed on rafts of bamboos or plaintain stalks which take two to eight people and are moved only by bamboo poles (8). On Lake Kiogo, East Africa, a raft on two canoes was poled across by four men who strode the length of the ferry, and shoving in their poles and pushing walked opposite ways at each turn, slapping their feet on the boards as they reached the end of each beat, then turning, time being kept, as among many ancient peoples, by singing.

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[4] M. E. Durham, *High Albania*.

[5] Northey, *The Land of the Ghurkas*.

[6] Dora H. de Beer, *Up a Yangtse Gorge*.

[7] Bernatzik, *Lapland*.

[8] Dunbar, *Other Men's Lives*.

Franck, in *Wanderings in North China*, gives a graphic description of a typical Chinese ferry.

' A marvellous example of the worst way to cross a river. . . . Out in the sand, close alongside the still broad stream, there were densely crowded together in all the disorder of which the Chinese, who are adepts at it, are capable, carts piled high with all sorts of awkward cargo, mules, donkeys and a few old hacks of horses, all under cumbersome packs, laden wheelbarrows by the score, and coolies without number, each carrying with him a donkey-load of something or other. All this assortment . . . was lying in wait for one of three clumsy home-made barges which, at long intervals, poled, and sing-songed themselves from shore to shore. . . . Out here on the bare sand there had sprung up several straw-mat restaurants, a shoemaker's hasty establishment, a blacksmith's shop which could have been packed up entire in five minutes and carried off over the smith's shoulder . . . while the hawkers of everything hawkable . . . struggled through the chaotic mob chanting their wares. Of course there were the inevitable beggars. . . . It would have been un-Chinese to take turns or conform to any system that might have made easier the task in hand, so that when the first of the three craft, overloaded, began to show signs of where it purposed to land, there was a helter-skelter in that direction. It would not have been conventional to prepare a place where the craft might actually land, any more than it would have been for it to carry a real gang-plank in place of the two warped and writhing slabs that were at length slid over the side . . . for how could the swarms of tattered men hanging about either shore earn their meagre food if carts and wheelbarrows could be got aboard without their assistance. A few who wished to disembark were swept back again on the boat; the half dozen polemen at the stern took up their weird chanty. Though the opposite shore was a stone-paved road close under the city wall, landing facilities were far worse. . . the craft grounded fully ten feet from the shore and could not be coaxed to move until all the coolies, who made up three quarters of the passenger list, had been driven overboard, packs and all, and left to scramble as best they could up the stone facing of the bank. Eventually, the boat was poled close enough to what should have been a stone runway, so that the frightened animals could be forced to walk the teetering plank without more than two or three of them falling overboard. Thousands of people and probably at least hundreds of carts cross the Wei at Sienyang every day, and have done so for centuries '.

Large flat-bottomed barges are used in the Far East. On a ferry on the Tsing-po, the barges used are described as being of walnut planks, flat-bottomed, and square-cornered, ' like boxes '. Though poled across, they were carried down by the current and might land half a mile downstream, men on shore drawing on a rope and pushing in the shallows to help them across. Each boat carried, on a single journey, twenty ponies, a dozen men, and a ton of loads (**9**). Some of these Eastern ferry boats have high ends and the only way in which animals can be got into them is by beating the creatures until they jump in ! In Africa, the ' goods ' ferry is often composed of two or more canoes lashed together, with a platform or raft over.

Where there is a strong current, there is always the danger of ' drift ' and sometimes on large oriental rivers a diagonal, or even a zig-zag course, is enforced upon the ferry manipulators. A work of the early 19th century (**10**) based largely on the Peninsular War, speaks of the use of ' flying bridges ' formed by anchoring a floating body in the river to receive the action of the stream obliquely, so that the force is derived from the

[9] Waddell, *Mysteries of Lhasa*.

[10] Douglas, *Military Bridges*, 1832.

current to move the vessel across the river, two large boats being commonly used on rivers of magnitude. A more usual way of ensuring a direct crossing is the rope method ; the same author speaks of communication being kept across the Thames at Gravesend during the Napoleonic invasion threat by means of a boat attached to a block on a cable stretched across the river, and of a ferry boat on the Tagus attached to a hawser by a ' traveller ' and worked across—a quite common procedure on ferries in many parts of the world. Ferries on which the boat is attached by a ' ring ' or traveller on a rope to a cable stretched across the river, exist in this country, e.g. at Exeter and at Claverton, near Bath.

An old picture of Rownham ferry, Hotwells, Bristol, in the Bristol Art Gallery, shows a large barge, capable of carrying horses and cattle, drawn by a cable wound on a capstan. (Another picture of the same ferry, however, shows the vessel being rowed).

The rope ferry exists in West Africa, where dug-out canoes, lashed together, support a platform. Ropes, with an end on each bank, cross the river, passing over the ferry, the crew hauling on the rope. In Japan, Mrs Bishop (11) describes the crossing of rivers in a scow ; high forks, planted securely in the bank on either side, sustained a rope of several strands of Wistaria knotted together—a form of rope frequently used where strength and durability were required—and one man hauled on this, hand over hand, while another poled at the stern. On this side of the old world, in Finnish Lapland, where ferries generally take the place of bridges, the ferry boat is a pontoon with a protecting rail on either side and stout steel ropes stretched tightly across the stream, well above water level. The ferryman sits on the rail by the side of the pontoon, pulling it across by hauling on the cables ; he may wear leather gloves or use a contrivance like a baseball bat, or a heavy butter pat with a transverse notch in the blade in which the rope engages, the pulling on the handle causing the whole contraption to grip (12).

Rope and cable ferries are not uncommon in the Far East, and were in more common use in this country up to the last century. At the Isle of Sheppey, in the middle of the 19th century, there were four ferries, which had existed ' from time immemorial '. The King's Ferry, then being superseded by the railway, was free for horse and man, except on Sundays, a toll being exacted for carriages ; the others were subject to tolls. The free ferry was managed by a corporation and the final arrangements were somewhat primitive ; on the opposite shores of the Swale were two ferry houses, which served, apparently not unusually, as ' public houses ' as well and beside each house two stumps of trees were firmly rooted in the ground. Around these were coiled stout cables (13).

The modern mis-named ' floating bridges ', such as those at Portsmouth and Southampton, are of course essentially cable-ferries, though the cables are ' guides ' and the motive power is steam.

If the ford has its legends of battle and benevolence, the ferry has its legends too, but almost invariably they are of death and the last crossing. This is, when one thinks of the respective purpose of the two oldest methods of crossing, not unnatural. The ford crosses a small or shallow river which, at its utmost, is a mere interruption to land communication and an obstruction ; the ferry is brought into play to cross a river which, before its existence, was a substantial barrier, with often the unknown on the other side. So, to primitive man, living on the near bank and knowing little of the other side, the river is the fence that shuts in his little world, from which he departs at the call of death alone. The underlying idea is far older than Charon and the Styx. The dead Egyptian

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[11] *Unbeaten Tracks in Japan.*

[12] F. J. North, *Finland in Summer.*

[13] *Gentleman's Magazine*, 1860.

and his funeral procession were transported across the Nile from the living Thebes to the Thebes of the dead by the funeral ferry crossing from east to west. There, at the western end of the ferry, lay the road to the rock-tombs of the Pharaohs and the graves of the lesser ones of Egypt. Egyptian legend speaks of a ferry-boat to the island of the Tree of Life, in which everything was alive and could speak. It was self-propelling, though in the care of a surly ferryman ' Look-behind ', who rarely spoke and to whom appeals or threats had to be addressed to secure the passage of the dead. ' O Ra ! Commend King Teti to " Look-behind " ferryman of the Lily-lake, that he may bring that ferryboat of the Lily-lake for King Teti, in which he ferries the gods to yonder side of the Lily-lake that he may ferry King Teti to yonder side of the Lily-lake to the east of the sky '. In the confessions to be made after death, one of the affirmative declarations of merit is the assertion that the deceased furnished ' a boat to him that needed one ' —obviously to cross the river.

Charon, the underworld ferryman of the Styx, had to be paid his penny, like any other ferryman, so the corpse had to be provided with the necessary coin—a practice not confined to the Romans and suggestive of a wider spread conception of the ghostly ferry which led from the banks of the living world to the other side of the river that bounded mortal existence. Those not given proper burial, and therefore not provided with the ferryman's fare, are condemned to wander helplessly and hopelessly on the river bank. The ferryman's fee is still occasionally put in the mouth of the Greek dead.

Other legends are of ghostly ferrymen, condemned to their task as a punishment. In Sweden, a ferryman who cursed his father and mother was punished by having to row a ferryboat without hope of release for 300 years, until the withered stump on which he sat gave out leaves, after being watered by the ' living water ' from the flask of a giant slain by the hero of the legend—when the ferryman was released from his burdening life (14). Every night, says tradition, a ghostly ferryman crosses the river near the Charles Bridge at Prague with, as his sole passenger, the spirit of a Jew who became a Roman Catholic priest but recanted on his deathbed and whose grave is in the Jewish cemetery (15).

Ferries were common in England in the dark and early Middle Ages. Even in later times not only did a large number provide the only means of crossing for many miles, but medieval bridges were so often unsafe and so usually left in disrepair that the ferry was commonly regarded as safer and not uncommonly brought back into use when the bridge had become ruinous. There were ferries across the Severn from early times, as owing to the width of the river and its strong tides, Gloucester was and still is, so far as road traffic is concerned, the nearest point to the sea at which there is a bridge across it. There were no bridges across the Trent between Newark and Nottingham until recent times and crossing was by ferry. One at Gainsborough is mentioned in 1336, and at Marnham in 1316. Up to the closing years of the 18th century communication between Sunderland and its now suburb Monkwearmouth was by ferry, for which grants were made during the reign of Edward IV.

The sites of ferries became bridge sites nearly as often as the sites of fords, and bridges were sometimes augmented by ferries, as was London Bridge. At Cambridge, in the time of Edward I, the great bridge was in such a ruinous state that a ferry was provided by the Sheriff, who appropriated to his own use the income from lands which should have furnished the funds for the repair of the bridge. Even today high-level bridges such as that at Saltash are supplemented by ferries operating beneath.

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[14] Lloyd, *Peasant Life in Sweden.* [15] Shepherd, *Czechoslovakian Year.*

Ferries seem to have been endowed sometimes. There was a ferry at St. Olave's on the river Waveney, in Norfolk, in the 13th century kept by a fisherman, who received ' bread, herrings and suchlike things ' to the value of 20*s* a year. In other cases, the right of ferry was an important source of income. Tradition relates that in the early days of the Saxon kings, a house of nuns, later changed by St. Swithin to a house of Canons Regular, at Southwark, had as its principal endowment the ferry of St. Mary Overie (St. Mary over the Water). According to legend, the original owner of the ferry, who amassed large profits from it, kept apprentices and ferrymen to convey passengers from his dock to Dowgate, on the other side of the river. John Awdry, the owner, was a miser and, to save a day's provisions, pretended to die, so that his household should fast in his honour, but they decided to celebrate his demise instead. The pseudo-corpse, essaying to interrupt the revelry, aimed a blow at the nearest apprentice who, in his fright, retorted to such effect as to kill his master. Awdry's daughter, in her distress, sent for her lover who, in his haste was thrown from his horse and killed, after which Mary Awdry, overwhelmed by misfortune, devoted her father's hoard to founding a sisterhood and endowed it with the profits of the ferry.

Modern times have endeavoured to invent a fresh ferry legend by inscribing a plaque by St. Martha's ferry at Guildford with a reference to Chaucer's pilgrims ; the common idea that the Pilgrim's Way, on which the ferry stands, was the Chaucer route dies hard and has even been propagated by the B.B.C. ; yet anyone who has studied the Tales and the numerous place-references in them can hardly fail to recognize the Watling Street as the route of the Tabard cavalcade and all London pilgrims. Guildford and the Hog's Bank were far out of their way.

Ferry grants are frequent in the middle ages even where there is or perhaps has been a bridge, as at Berwick-on-Tweed, where grants were made and renewed three times in the 14th century, and even in 1433 there is some doubt as to whether the bridge which had once been there had been replaced, as there is a grant of one-third part of the profits from the common passage and ferry. Generally however the ferry preceded and was replaced by a bridge. At Nottingham in 1363 a grant of ferry was made for five years while Hethbeth or Trent bridge was being rebuilt, the profits being earmarked for the repair or making of the bridge.

In 1586 the rental paid for a ferry at Ovingham on the Tyne was 2*s* a year—in 1608 £1 a year ; the latter sum was doubled when the lease was renewed in 1618 and by 1760 had been raised to £12 a year. At the last named period, the ferryman had to keep a ' horseboat ' as well as a ' footboat '. Cavendish bridge, on the Trent, took over the ferry rates when it was built in 1758,—2*s* 6*d* for a chaise and one penny for every person, whether on foot or horseback, though these rates were considerably reduced by the end of the century. For many centuries a penny seems to have been a usual charge for ferrying a foot passenger, just as it was with the Romans, despite the varying value of the ' penny '.

The monasteries by their obligations to the traveller, seem to have had a hand in the running of ferries and one at Castleford was mentioned in the charter of Henry I to the monks of Pontefract. The name Castleford suggests that the ferry replaced a ford, which was certainly the case at Stainforth, where there was a ford in 1558 but a ferry in 1697.

Ferries, on the whole, seem to be lucrative ' rights ', and the possessors of them jealously guarded their privileges. There were however obligations, and a trial in the reign of Edward III had to settle the responsibility for repairs to the ' Long Ferry ' over the Thames at Milton, near Gravesend, after a great storm in 1286. The men of Milton

had to repair half of the ' bridge ' and causeway next the land, the lord of the manor of Gravesend the other half. In the same reign the bailiff of the manor of Gravesend received ' of the farm of pontage and ferriage over the Thames, by the year, twenty shillings ' (16).

In other parts of the world, similar arrangements prevail or have prevailed. Père Huc (*Travels in Tartary*, 1844) speaks of a family which had the sole right of ferrying travellers across a river and with whom he had to bargain, whereas in other parts there was free competition. In Albania, too, ferry rights were the privilege of a tribe or family (17), while in West Africa, at the end of the 18th century, according to Mungo Park, the King of Bambarra employed a great many slaves to convey people over the river, at a fare of ten cowrie shells each, in canoes made of tree trunks which could carry four horses and several people. In *Mysteries of Lhasa*, Mr Waddell gives the ferry fees payable to a monastery at one point as the equivalent of 2*d* per passenger and 4*d* a pony. The ferryman of Upper Egypt who conveys cattle and labourers to the fields across the river is paid by the villagers in produce, but outsiders have to pay cash (18). In Japan, tariffs of charges are posted at the ferries as well as at bridges where charges are made and a man is stationed at each to collect the money (19).

That a ferryman's job was not always a lucrative one, however, is suggested by the Pyrenean folklore story of the fox who, when the ferryman demanded his fare, said ' If you would make money by ferrying—and in truth you need a new pair of trousers—you must ferry richer people than I am '—and ran off (20) !

Even if the form of the ferry has changed almost out of recognition it is still a big factor in communication in the most advanced communities. Impelled by modern steam machinery it is common in such a country as Denmark, where the ferry steamer, like the primitive ferryboat on a smaller scale, provides opportunities of studying a cross section of the population and the travelling public far more representative than a vessel spanning a longer distance, a railway carriage or even a bridge with its distributed load. If the road ferry is a disappearing factor in advanced communities, the train ferry is a growing one, and even in the Far East the rowed, poled, or towed ferry may be superseded or augmented by ferry boats drawn by steam launches (21). On the other side of the world there were few bridges over the wide rivers of Virginia until recently, and ferries were used to cross the Potomac until 1940, when a bridge nearly three miles long was built (22). In our own country Dartmouth has a railway station without a railway, to receive steam-ferry passengers from across the river at Kingswear.

One wonders whether any medieval travellers, inured to difficult travel and faced with no alternative, ever refused to cross a sheltered estuary for fear of mal-de-mer, as did two old cockney ladies at Brightlingsea, in the presence of the author—or even a placid river such as the Avon at Christchurch, Hants, where a punt still does duty as a ferry boat, as did another lady for the same reason.

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[16] *Gentleman's Magazine*, 1852.
[17] M. E. Durham, *High Albania*.
[18] Winifred Blackman, *Fellahin of Upper Egypt*.
[19] Mrs Bishop, *Unbeaten Tracks in Japan*, 1900.
[20] Robson, *A Wayfarer in the Pyrenees*, 1909.
[21] Casey, *Four Faces of Siva*, 1929.
[22] *National Geographical Magazine*, May 1942.

The Problem of Early Water-mills

by E. Cecil Curwen

In previous papers the writer has suggested that, according to such evidence as is available, the rotary quern must have been derived from the large and heavy donkey-mill of Greece and Rome (1), and Childe has further suggested that this development may have been brought about through the adaptation of the rotary principle to small portable mills suitable for the use of armies in the field (2). Thus legionaries, upon demobilization, would carry the idea, if not the articles themselves, back to their peasant homes.

When we come to enquire into the origin of water-mills we are faced with an array of evidence which is tantalizingly sketchy, but which on careful sifting strongly suggests that two kinds of water-mill must have appeared during the first century B.C. in the Mediterranean world, the second kind presumably having been derived from the first, which in its turn seems to have been an adaptation of the rotary quern. The distinction between these two varieties of water-mill has survived down to the present day in their (to some extent) mutually exclusive distribution. Their principal characteristics are as follows.

I. The more primitive, and therefore presumably the earlier, type is distinguished by having a *vertical shaft* or axle carrying a small horizontal wheel at its lower end, its upper end passing through the lower mill-stone and being fixed to the upper mill-stone by a cross-bar (or rynd) which spans the aperture or 'eye' of this stone (FIG. 1, A). Thus the wheel, shaft and upper stone all move together in one piece, and there is no intermediate gearing. A horizontal wheel can only be made to turn if the force of the water is directed against one side of it; this necessitates the use of some kind of mill-race by which water is diverted from the river and directed by means of a chute against the vanes of the paddle-wheel. A mill-pond is not necessary as a rule, but may be a useful addition in order to conserve a head of water for use in a dry season. The motive power, therefore, is primarily the force of the current, and this type of water-mill is principally found in hilly or mountainous country where rivers are swift-flowing. It is also characteristic of peasant-cultures, as opposed to commercial food-production, and seems to be essentially a peasant-adaptation of the rotary quern. They tend to be owned in common by peasants who grind their own corn in them, and several such mills are sometimes worked by a single stream for the benefit of a single peasant-community (PLATE III). For convenience we shall speak of this type as the *vertical* water-mill (3).

II. The second type, which was described, and may have been invented, by the Roman engineer Vitruvius (4) (between 20 and 11 B.C.), is characterized by having a *horizontal shaft* and a vertical water-wheel (FIG. 1, B). The shaft is geared by cog-wheels to a vertical spindle which turns the upper stone in the same manner as the shaft of the first mill described above. The wheel in its arrangement and working may be either

[1] ANTIQUITY, 1937, XI, 137–40; also 1941, XV, 15–6.

[2] ANTIQUITY, 1943, XVII, 24–5; *Revue Archéol.*, 1900, XXXVI, 29, 30.

[3] The terms 'Greek Mill' and 'Norse Mill' used by Bennett and Elton, are open to obvious objections.

[4] Vitruvius, *De Architectura*, X, 5, 2.

undershot, overshot, or a breast-wheel (FIG. 2). These distinctions are important, as will be seen presently.

(*a*) When undershot, the wheel is turned by the force of the unimpeded current of the river flowing under it (FIG. 2, A). There is neither dam, mill-pond nor mill-race,

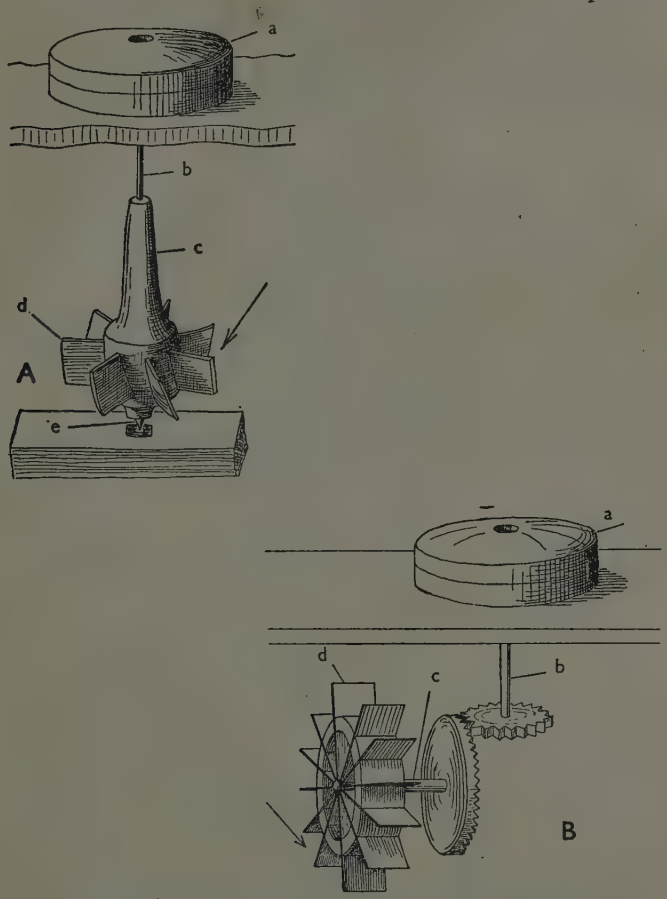

FIG. 1. THE ESSENTIAL FEATURES OF (A) THE VERTICAL MILL AND (B) THE VITRUVIAN MILL WITH UNDERSHOT WHEEL
a, mill-stones. *b*, spindle. *c*, shaft. *d*, vanes. *e*, gudgeon.

and an undershot wheel is only suitable for swift-flowing rivers of fairly constant volume. The mill described by Vitruvius had a wheel of this kind.

(*b*) In the case of an overshot wheel the water passes over it, is caught in troughs or 'buckets' attached to the circumference, and thus turns the wheel by its weight (FIG. 2, B). In order to do this it must be diverted from the river by a mill-race, stored in a mill-pond, and delivered by a chute controlled by a sluice. This kind is suitable

for sluggish rivers in flat country, or of variable volume. The earliest evidence of the use of the overshot wheel comes from Athens, where an example has recently been discovered in excavations in the Agora, dated to the third quarter of the 5th century A.D. (5).

(*c*) The breast-wheel is similar to the overshot wheel in that it is turned by the weight of the water which is brought by a mill-race. But instead of passing over the wheel the water fills troughs on the near side of it, the water-level in the mill-pond being approximately even with the shaft or axle (FIG. 2, C). From our present point of view the breast-wheel may be considered as an unimportant variation of the overshot wheel.

The Vitruvian Mill

For convenience we shall speak of this mill with the horizontal shaft as the *Vitruvian* mill. On the face of it this mill would appear to be an engineer's improvement on the primitive vertical mill, designed to obviate the need for mill-race and sluice by the adoption of the original undershot wheel. By means of its gearing, too, the upper millstone could be made to revolve more rapidly than the wheel, though this point is somewhat ambiguous in Vitruvius' description of the mechanism. One point, however, is important for our present purpose, and that is that Vitruvius includes this water-mill among a number of machines which, he says, were rarely employed in his day. But, as time has shown, it was an invention which possessed great commercial possibilities. The idea appears, however, to have been pigeon-holed for four centuries, for it is not until the latter part of the 4th century that we have any evidence of its use in the Roman Empire. As far as Rome itself was concerned the vested interests of the Miller's Guild were strong enough to resist its introduction so long as paganism survived, for the established mills were worked by animal or slave labour, and the introduction of water-power would have involved the transference of the numerous businesses concerned to fresh sites where running water was available. Upon the general adoption of Christianity, however, the use of animal and slave labour was discontinued, and a substitute for them had to be found. It was then that the Vitruvian water-mill came into its own (6), and from the end of the 4th century onwards it became the standard mill of the urban civilization of the later Empire. We have already referred to the discovery of one such mill at Athens, dated to the 5th century; a mosaic depicting another, with undershot wheel, has recently been uncovered in the Great Palace at Byzantium (7).

A water-mill of some kind was known in Gaul soon after the middle of the 4th century, for Ausonius, writing about 370, refers not only to water-mills for corn but also to water-driven saws for cutting marble, situated on the Ruwer, a tributary of the Moselle, near Trèves (8). Unfortunately he gives no indication of the type of mill, but one suspects that in a culture that could employ saw-mills corn-mills are likely to have been of the Vitruvian type.

In due course the use of the Vitruvian mill seems to have spread northwards into the

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[5] *Hesperia*, V, 70.

[6] About this time Palladius (*R.R.*, I, 42) urged the construction of water-mills to replace animal and slave labour: 'Si aquae copia est . . . debent pistrina suscipere, ut ibi formatis aquariis molis, sine animalium vel hominum labore, frumenta frangatur'.

[7] ANTIQUITY, 1939, XIII, 354–6.

[8] Ausonius, X, lines 359–64:—'Marmore clarus Erubris . . .
Praecipiti torquens cerealia saxa rotatu,
Stridentesque trahens per levia marmora serras'.

territories of the barbarians who ultimately conquered Rome. When, for instance, Rome was besieged by the Goths in 536, the besiegers thought to starve the citizens by cutting off the water supplying the mills which were then situated on the Janiculum hill. Their design was, however, frustrated by an ingenious device by which some of the mills were transferred to boats which were moored on the Tiber, so that the mill-wheels were still turned by the swift current of the river (**9**). With their undershot wheels these boats must have looked rather like paddle-steamers, except that the water was giving motion to the paddles instead of *vice versa*. So successful was this device that, not only were the Goths defeated, but the use of floating mills was perpetuated at Rome until the 19th century.

One can understand that the Goths and other barbarians must have been considerably impressed by these water-mills, and they may well have taken the idea home with them and constructed their own versions of them on the German rivers. At any rate the early distribution of the Vitruvian mill seems to have been mainly northwards, whence it ultimately reached Britain perhaps in the 7th, certainly by the 8th century. The first

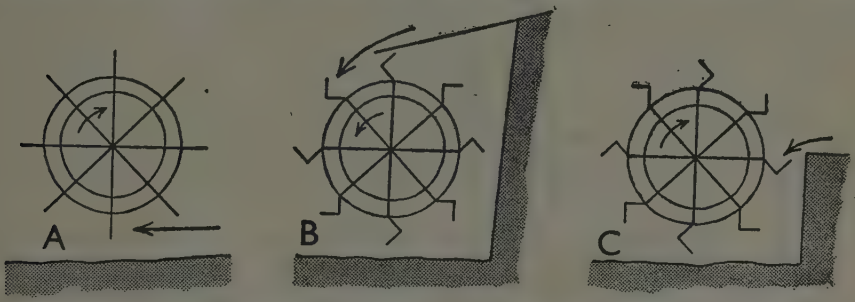

FIG. 2. DIAGRAM ILLUSTRATING (A) UNDERSHOT, (B) OVERSHOT, AND (C) BREAST WHEELS
(Arrows indicate direction of flow of water and of rotation of wheel)

definite evidence of a mill in England is contained in a charter of Ethelbert, King of Kent, dated 762, in which reference is made to a monastic mill near Dover. From then onwards references to mills are numerous, especially in Domesday, where 5624 mills are listed (**10**), and, although no hint is given of their structure until the middle ages, nothing is said of any revolutionary change in their character, and hence in the absence of evidence to the contrary we are justified in concluding that the English water-mill has always been of the Vitruvian type, and that its evolution from its original simple form to the more complex mechanism of its modern representative has been a continuous one. Medieval illustrations of French mills, the earliest of which is from a 12th century manuscript, seems always to show an undershot wheel. On the other hand weirs appear to have been erected on English tidal rivers in connexion with mills as early as the 13th century, which may mean that the overshot wheel was being used at that time (**11**), but the association of the weirs with the mills is not certain, and they are just as likely to have been intended for trapping fish. By the 14th century, however, causeways or dams for heading up the entire upper reaches of a river were in general use, which can only mean that overshot, or at least breast wheels, were already in use. By the 16th century

[9] Procopius, *De Bello Gothico*, I, 15. [10] ANTIQUITY, 1939, XIII, 266.

[11] *Liber Niger Admiralitatis*, No. C, xxxiv (quoted by Bennett and Elton, *History of Corn-milling*, II, 182).

the undershot wheel had so far disappeared from general use that Fitzherbert could say : ' There be two manner of watermills—a brast mill and an overshot mill ' (12).

This brief outline of the story of the Vitruvian mill from the time of its first appearance down to the present day will serve as a background for a discussion of the possible origin and diffusion of the primitive vertical mill, the chief characteristics of which have already been indicated. Here we shall be forced to depend to a large extent on circumstantial evidence for the earlier periods, and our conclusions will at best be only tentative.

The Vertical Mill

The vertical mill, being the simplest mechanism by which water-power was harnessed for turning a mill-stone, is presumably the oldest ; indeed its prior existence is presupposed when one studies the Vitruvian mill from a typological point of view. Unfortunately, however, we have no positive evidence as to its origin, and early references to mills seldom give indications of the type to which they belong. Its early origin is also to be presumed from its wide distribution in Europe and Asia, though the complete distribution of the type, whether past or present, is not easy to obtain owing to the too frequent silence of travellers on such matters.

The earliest known water-mill is mentioned in a passage of Strabo (13), in which he refers to some of the wonders of the city of Mithridates, King of Pontus, near the southern shore of the Black Sea—possessions which he lost when he was defeated by the Romans under Pompey in 65 B.C. Among these was a machine called ὑδραλέτης, a ' water-grinder '—a possession which must have been well-nigh unique to have been thus singled out for special mention. Strabo says nothing of its nature or character, but his record of its existence can probably be trusted, as he was a careful writer and was himself a native of those very parts.

This mill existed before Pontus came under Roman sway, therefore it was not in any sense a Roman invention ; moreover it appeared at least half a century before Vitruvius described his mill, so that it would seem very improbable, though not quite impossible, that Mithridates' mill should have been one of Vitruvian pattern. That is as much as can be said about it on the evidence available.

The next reference to a water-mill is rather more informative. It is contained in a Greek epigram attributed to Antipater of Thessalonica, who appears to have been a contemporary of Vitruvius :

' Cease your work at the querns, ye grinding-maids ; sleep long, even if the crowing of the cocks proclaim the dawn. For Demeter has laid the toils of your hands upon the water-nymphs, and they, leaping down upon the top of the wheel, turn the axle which by its whirling spokes causes the heavy, hollow Nisyrian mill-stones to revolve. . . .' (14)

This passage is worth careful study. In the first place the author exhibits some knowledge of the working of the mill in question, and gives details which seem surprisingly practical for a poet. Secondly, the principal idea contained in the epigram seems to be the novelty of this device, and its revolutionary character, from which we

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[12] Fitzherbert, *Boke of Surveying*, 1538 (quoted by Bennett and Elton, op. cit. II, 191).

[13] Strabo, XII, 3, 30.

[14] *Greek Anthology*, IX, 418. I follow Stadtmüller in the reading of line 6—στρωφᾷ Νισυρίων for στρωφᾶται πισύρων, the latter making nonsense of both sense and grammar. Most of the existing English translations do not bring out the structural details of the mill accurately. Nisyros was a volcanic island in the Aegean where millstones were quarried (Strabo, X, 5, 16 ; cf. *Gk. Anth.* IX, 21).

may infer that this water-mill was a recent introduction into the district of Thessalonica. Thirdly, the people who are congratulated by the poet are not those who are going to make capital out of the new device as a commercial venture in the cities ; they are the slave-girls whose daily duty was the monotonous drudgery of the quern, and who worked for their masters' households—in country districts rather than towns, if the reference to the cocks may be allowed to have significance. This surely tells us that Antipater's mill was a development from the quern, not from the commercial mills (whose owners, as we have already seen, resisted the adoption of the water-mills for four centuries), and that the device came into being for the benefit of peasant farmers in country districts.

The next question is : did Antipater's mill belong to the vertical or to the Vitruvian type ? Four parts of the mill are mentioned : the wheel, the shaft (or axle), the ' spokes ', and the mill-stones, and the general impression is that the drive is direct from the wheel to the stones, *via* the shaft and the ' spokes '. In the first place, the nymphs are described as ' leaping down upon the top of the wheel '; this cannot possibly describe the undershot wheel of Vitruvius' mill ; it could apply to the action of the water on an overshot wheel, if such existed at that time, which it almost certainly did not. But what it does describe most vividly is the water pouring down the chute from a mill-race on to the horizontal floats or vanes of the wheel of a primitive vertical mill, such as those illustrated in FIGS. 3–5.

Next the shaft is described as transmitting the movement to the stone(s) by means of ' whirling spokes '. The Greek word used here, ἄκτις, like the Latin *radius*, signifies a ray, or the spoke of a wheel. It seems very unlikely that this could be taken as referring to the cogs on the cog-wheels of the Vitruvian mill ; it is far more probable that the reference in this case is to the attachment of the top of the shaft or spindle to the upper mill-stone by means of radiating iron spokes, which is an occasional variant of the more usual iron rynd.

The stones (plural for singular by poetic license) are said to be ' hollow ' as well as heavy ; this must refer to the concavity of the grinding surface of the upper stone, which when pronounced, is characteristic of early rotary querns, as well as of donkey-mills (15).

Taking the evidence as a whole, then, we may say that it points fairly clearly and consistently to the conclusion that Antipater's mill was of the vertical type, and that it was a feature of peasant rather than urban culture. Thessalonica lies but a few hundred miles west of Pontus, and it is tempting to think that the knowledge of Mithridates' mill had travelled so far in the course of half a century.

About a century after the time of Vitruvius and Antipater we find Pliny stating that in the greater part of rural Italy two methods of grinding corn were in use : a roughened pestle (and mortar), and wheels turned by water (16). This curiously off-hand reference to rural water-mills suggests that Pliny knew very little about them and cared less ; he gives no indication as to the type of mill used, but we note that water-mills were being used by the peasant farmers at a time when Rome was only using slave and cattle mills. It would be a reasonable assumption that the vertical mill had by this time spread from Thessalonica to rural Italy, and this view is rendered more probable by the survival of the vertical water-mill in both areas down to comparatively recent times.

In the 17th century the French traveller Darvieux says : ' The mills on Lebanon and Carmel bear a great resemblance to those found in many parts of Italy. They are exceedingly simple and cost little. The mill-stone and wheel are fastened on the same

[15] ANTIQUITY, 1937, XI, 140–2.

[16] Pliny, *Nat. Hist.*, XVIII, 23—' Maior pars Italiae ruido utitur pilo ; rotis etiam quas aqua verset obiter, et molat '.

axis. The wheel (if it can be so called) consists of eight hollow boards, shaped like a shovel, placed across the axis' (17).

A century earlier another French traveller, Belon, saw similar mills at Mount Athos in Greece, only 50 or 60 miles from Thessalonica (18). Yet another Frenchman, Castellan, described vertical mills which he saw in various parts of Asia Minor and Greece early in the 19th century (19) (FIG. 3). More recently still the same type has been observed in the Carpathians in Roumania (20), and near Carrara in Italy (21).

There is thus plenty of evidence that the vertical mill was widely known and used between Italy and Palestine within the last few hundred years. This fact increases the probability that the earliest mills to be used in the same area were also of the vertical type.

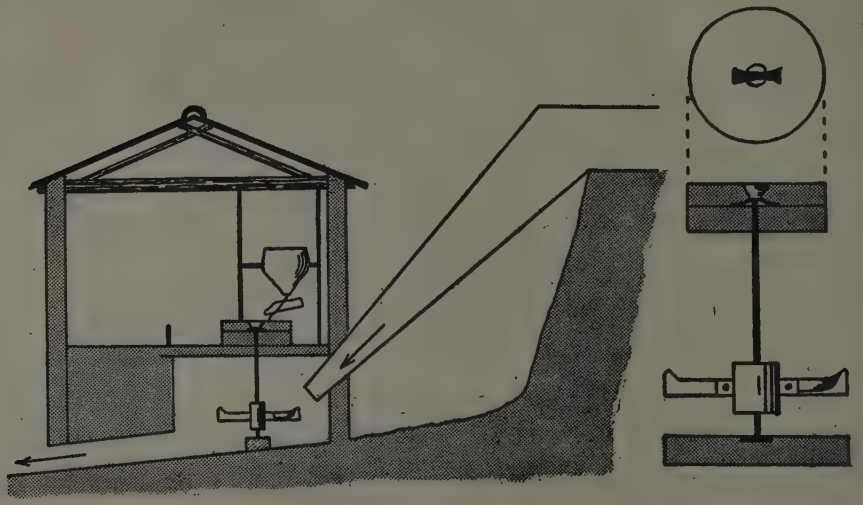

FIG. 3. VERTICAL MILL AT LAMPSAKI, DARDANELLES (1808)
(Based on Castellan, simplified)

The late J. Romilly Allen observed vertical mills working in Persia, and his drawing of the horizontal mill-wheel is reproduced by Goudie (22). The same type of mill is also commonly found in Turkestan and parts of China at the present day. Miss Francesca French, one of three intrepid lady explorers of Central Asia, and joint author of *The Gobi Desert*, tells me that she and her friends often spent a summer holiday in a Shansi valley (North China) in which a lively stream turned 99 water-mills. These worked by means of a vertical shaft and horizontal wheel, and she examined mills of the same kind in Turkestan. Mrs Bishop, a traveller of the end of last century, also noted the prevalence of vertical mills in Western China, especially in the Cheng-tu plain (23).

[17] Darvieux, *Des Arabes* (Paris, 1717), quoted by Bennett and Elton, op. cit. II, 11.

[18] Belon, *Choses mémorables* (Paris, 1553), quoted by Bennett and Elton, op. cit. II, 10.

[19] A. L. Castellan, *Lettres sur Constantinople* (Paris, 1811), quoted by T. P. O'Reilly in *Proc. R. Irish Acad.* 1902–4, XXIV, sect. C, 68–73.

[20] Bennett and Elton, op. cit. 24–5.

[21] *The Scotsman*, 24 Aug. 1885 (quoted in *Proc. Soc. Ant. Scot.*, XX, 297 *n*).

[22] *Proc. Soc. Ant. Scot.* 1886, XX, 295–6.

[23] Bennett and Elton, op. cit. II, 26.

When we turn westwards from Italy we find that vertical mills have been used in Spain too. In the 18th century Townsend wrote of the country on the borders of Old Castille and the Asturias :

' In the midst of these stupendous mountains a few rich valleys intervene, each with its little village, in size proportioned to the extent of land susceptible of cultivation. In the ravines through which we passed I observed that all the mills have horizontal water-wheels . . . they place many near together, and the same little stream, having communicated motion to one wheel, passes in succession to the rest '(24).

FIG. 4. VERTICAL MILL NEAR COMILLAS, SANTANDER, N. SPAIN (1860)
(Note chute obliquely placed behind wheel)
(Based on O'Reilly, simplified)

J. P. O'Reilly also saw similar mills on the north coast of Spain, adapted for use as tidal mills (FIG. 4). He says of them :

' These mills correspond in the simplicity of their structural arrangements with what has been described of the Shetland and other Scotch mills. . . . They are mostly intended for purely local and even personal wants, and one would rarely see more corn coming at a time to be ground than can be carried on an ass's back '(25).

[24] Townsend, *Travels* (London, 1791), II, 59, 60 (quoted by O'Reilly in *P.R.I.A.*, 1902–4, XXIV, Sect. C, 76). [25] *Proc. R. Irish Acad.*, 1902–4, XXIV, Sect. C. 75 (illustrated).

Passing northwards we find record of a similar mill having been used on the Garonne in France, described by Paul Henzer in 1588. ' The wheel ', he says, ' is much smaller than ours, and has a shaft inserted in the centre of the floats or vanes, which revolve with great rapidity. The wheel is not set perpendicularly upon the water, but moves horizontally in it ' (26). Such mills cannot, however, have been common in France, otherwise the French travellers, already cited, would not have been surprised at seeing them in Greece and the Levant.

There is no evidence, so far as the writer knows, that the vertical mill was ever used in northern France, England or Wales ; those areas seem only to have known the Vitruvian mill. In Ireland, however, we have plenty of evidence of the use of the vertical mill going at least as far back as Viking times, and continuing as late as the middle of the 19th century in Connaught, where they were called ' gig-mills ' (27). At various times and places parts of these mills have been unearthed in peat, but unfortunately without evidence to date them. These include remains of timber flooring spanning streams, mill-stones (diameter 24 to 29 in.), oak chutes, and oak shafts morticed for the attachment of floats or vanes (28). Shafts retaining some of their vanes have also been found, one of which, found in the Bog of Moycraig, near Ballymoney, co. Antrim, had the shaft 6½ ft. long, with ten (originally nineteen) curved oaken vanes, shaped like ladles, morticed to the nave (29). At the lower end of the shaft was a stone pivot or gudgeon, secured by a wooden wedge.

At the close of the 17th century the memory of these mills was still fresh in co. Down, where they were called Danish or ladle mills. ' The axle-tree stood upright, and the small stones (or querns, such as are turned with hands) on the top thereof. The water-wheel was fixed at the lower end of the axle-tree, and did run horizontally among the water, a small force driving it ' (30).

The antiquity of the vertical mill in Ireland is also vouched for by a few literary references. In one of the early tales a warrior's spear is likened to ' the shaft of a mill with its paddles, its fastening, and its gudgeon ' (31) ; only the shaft of a vertical mill could be meant in this passage, since that of a Vitruvian mill is short and quite unimpressive. Cormac's Glossary, too, dating from the 9th or 10th century, likens the whirlpool of Coire-Brecain to the whirling of mill-paddles—a simile which would be possible only if the mill-wheel were horizontal and the shaft vertical.

But the history of the mill in Ireland goes back a good deal further than this, and the problem now before us is to determine, if we can, whether the earliest Irish water-mills, i.e. those earlier than the Scandinavian colonization, were of the vertical or of the Vitruvian type. In other words, was the vertical mill introduced to Ireland by the Norsemen, or did the latter derive their knowledge of it from Ireland ?

A tradition embodied in an 11th century poem ascribes the introduction of the first water-mill to Cormac macArt, King of Ireland (A.D. 254–277). According to this story Cormac sent abroad for a mill-wright who constructed a mill on the river Nith which flows from the well of Nemnach at Tara. Curiously enough, an oral tradition to the same effect was found to have survived locally (32). If these traditions, so strikingly confirming one another, have any historical value, and if we were to accept the date

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[26] *Itin. Gall.*, 56, 262 (quoted by Bennett and Elton, op. cit. II, 11).

[27] *Ulster J. Archaeology*, 1857, V, 91–2. [28] *Kilkenny Arch. Soc.*, 1850, I, 154.

[29] *Ulster J. Archaeology*, 1856, IV, 6, 7 (illustrated). [30] Montgomery MSS., *c.* 1698, f. 321.

[31] *Togail Bruidne Da Derga*, ed. Eleanor Knott (Dublin, 1936), lines 794–5.

[32] Petrie, *History and Antiquities of Tara Hill*, 147, 162.

indicated therein, then Cormac's mill could scarcely have been of the Vitruvian variety. Tradition, however, is too slender a peg to hang any weighty argument upon, but, as will be seen, the conclusion to be drawn from it in this case (for what it is worth) agrees with that which emerges from more reliable evidence.

The earliest historical reference to a mill in Ireland occurs in three of the Annals (Four Masters, Ulster, and Tigernach), under dates varying between 647 and 651, when the two sons of King Blathmac were slain at Mael Odran's mill (Mullinoran, near Mullingar, co. Westmeath). From the 7th century onwards water-mills were numerous in Ireland, and the early saints built them to supply their monasteries (33).

Fortunately we have in the Irish Laws some indications of the structure of these early mills, and in interpreting the details I have pleasure in acknowledging the very valuable help I have received from Professor D. A. Binchy of Dublin, to whose wide knowledge of Celtic philology and the ancient Irish texts I owe most of the details that follow.

The Senchus Mor is a collection of tracts that was put together about the first quarter of the 8th century, but parts of the component tracts certainly date from the 7th century, if not actually from the 6th. Among them we have a list of the essential parts of a mill, with later glosses and commentaries, these latter being of uncertain value (34).

First, there are the source of water, the mill-race and the mill-pond. Then we have *liae*, the upper mill-stone, and *indeoin*, the lower stone, literally ' anvil '. *Mol* is the shaft—in all the older examples ' the shaft of a (horizontal ?) mill-wheel ' (35). *Herintiu* is for *ermtiud*, a term used for the ' butt ' of a spear or the ' spike ' of a staff ; here, therefore, it must apply to the stone gudgeon or pivot which was attached to the lower end of the wooden shaft, as in the example found in the Bog of Moycraig, already mentioned. It is also the term used of the gudgeon of the mill-shaft to which the warrior's spear was likened as noted above. The gloss calls this word the ' shaft-stone . . . the little stone which is under the head of the shaft and on which the shaft turns '. At first reading this sounds like a stone lying on the bed of the stream as a support to the shaft, but in view of the Moycraig example it is clear that it refers to the stone gudgeon itself.

Oircél, literally ' trough ', is glossed as the ' paddle-wheel ', but there is little doubt that it refers to the vanes, paddles or ladles which radiated from the shaft to form the wheel. In the tale of Bricriu's Feast there is a reference to ' a mill of ten *oircél* ', that is, ten vanes on the wheel. The use of a word meaning ' trough ', like the use of the term ' ladle ' in English, emphasizes the fact that the side of each vane on which the water impinged was often concave, as in the Moycraig example.

The word *milaire* occurs nowhere else, and the gloss is obscure : ' the burden of the shaft, i.e. the *gamul* '. Joyce says that it is the usual modern Irish term for the pivot on which the mill-stone turns (36), but as a mill-stone, other than a quern, does not turn on a pivot, this cannot be accurate. What he probably means is the spindle which turns the upper stone. In a Vitruvian mill this spindle is geared to the shaft by cog-wheels ; in a

[33] P. W. Joyce, *The Social History of Ancient Ireland* (London, 1903), II, 330–48.

[34] *Ancient Laws of Ireland*, I, 125, 141.

[35] *Contributions to a Dictionary of the Irish Language*, M (Royal Irish Academy), col. 161.

[36] Joyce, op. cit. 337; see also Edward O'Reilly, *Irish-Eng. Dict.* (Suppl. by J. O'Donovan), and P. S. Dinneen, *Irish-Eng. Dict.* (1904), s.v. Míolaire. It is possible that O. Ir. *milaire* may be a loan from Lat. *miliarium*, the central column supporting the spindle of an olive-press (Cato, *R.R.*, 20–1). If so, it may be one more straw indicating the direction from which the mill was brought to Ireland, viz. from a Latin-speaking country such as Spain.

vertical mill it forms one piece with the shaft, being made of iron, while the shaft is always of wood. Thus, if *milaire* signifies the spindle, its mention as a separate item from the shaft suggests that it was made of iron, as indeed the strain on it necessitated. In modern examples in Shetland and the Faroes the iron spindle usually runs right through the centre of the shaft, but sometimes it is merely set into the top of it (37).

Finally we have *cup* and *comla*, two terms which through scribal confusion have been joined together as if they were one. The gloss as read in another manuscript says of *cup* : ' that which scatters the corn from itself, the upper stone ', which evidently refers to the hopper from which a continuous trickle of grain percolates into the eye of the upper stone. *Comla*, literally the ' valve ' of a door, refers here to the eye of the upper stone into which the grain is fed (38). *Tual*, a word which occurs only in the gloss, probably means the iron rynd, which might have been a simple cross-bar spanning the eye, or a cruciform ' moline ', or a perforated iron plate. In any case the spindle was firmly attached to the centre of it.

If, with Joyce, we regard this mill as belonging to the Vitruvian variety, we are faced with three difficulties. In the first place the references to the mill-race and pond would indicate an overshot wheel, which though possible in the 7th century, is rather improbable. Then, too, if the shaft was horizontal, the *ermtiud*, or gudgeon, would not be the most appropriate form of bearing for it. Finally, though there has been doubt as to the precise significance of some of the terms used, there is not one that could have signified the two cog-wheels by which the shaft and spindle would have been geared together ; and, in view of the inclusion of such a small matter as the gudgeon, the large and important cog-wheels would surely not have been omitted if the shaft had been a horizontal one. On the other hand, if we try to visualize the works of a vertical mill while studying the names of the parts given in the Senchus Mor, each detail fits into place quite naturally (FIG. 5).

It is not necessary to labour the comparison, but it may be well to point out that in those places in which the vertical mill has survived in use to the present day, mill-races of some kind, however simple, are a regular feature, while mill-ponds are also found in places where the supply of water is fitful (39). The prominence of these features in the Irish Laws need not therefore be taken as indicating that the mills in question were Vitruvian—rather the reverse, as has been shown.

We conclude, therefore, that the vertical mill was in general use in Ireland from at least the 7th century, that is, before the arrival of the Vikings, and that it was not until the last few centuries that it has been gradually superseded by the modern representative of the Vitruvian mill, probably under English influence.

Passing on in our quest we find that the vertical mill was used in the Isle of Man at any rate as late as the end of the 17th century, when the author of the Montgomery manuscripts saw them. We also have a more detailed record which enables us to make comparisons with the Irish mills :—

' In the Isle of Man, on many of the rivers, is a cheap sort of mill, which, as it costs very little, is no great loss though it stand idle six months in the year. The water-wheel lies horizontal, consisting of a great many hollow ladles, against which the water brought

[37] *Proc. Soc. Ant. Scot.*, 1886, XX, 259, 274.

[38] Dr Charles Plummer's MS Glossary, now in the Royal Irish Academy. Alternatively *cup* may be a loan from Lat. *cupa*, the cross-bar of an olive-press which pivots on the spindle as the rynd of a quern does (Cato, *R.R.*, 21). *Cup* would then signify the rynd of the mill-stone, glossed as *tual*.

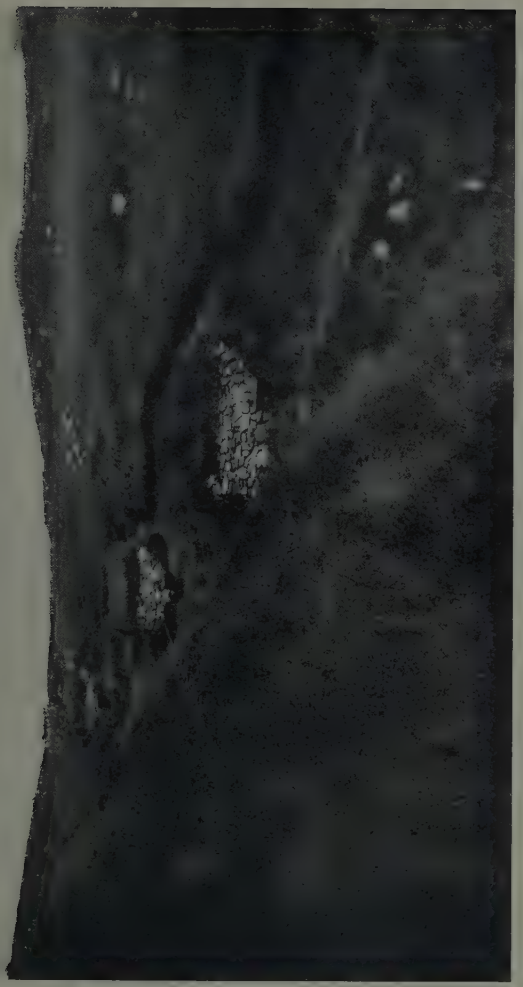
[39] *Proc. Soc. Ant. Scot.*, 1886, XX, 271.

PLATE I

VERTICAL MILL AT SHAWBOST, LEWIS
Ph. E. Cecil Curwen, 1937

facing p. 140

(*Above*) VERTICAL MILL ON FOULA, SHETLAND
(*Below*) THE WHEEL OF A SHETLAND MILL
Phs. H. B. Curwen, 1902



A CHAIN OF FIVE MILLS ON ONE STREAM, SHETLAND
Ph. W. P. D. Stebbing, 1906

PLATE IV

VERTICAL MILL, NORWAY. (Note wheel and chute)
Ph. H. B. Curwen

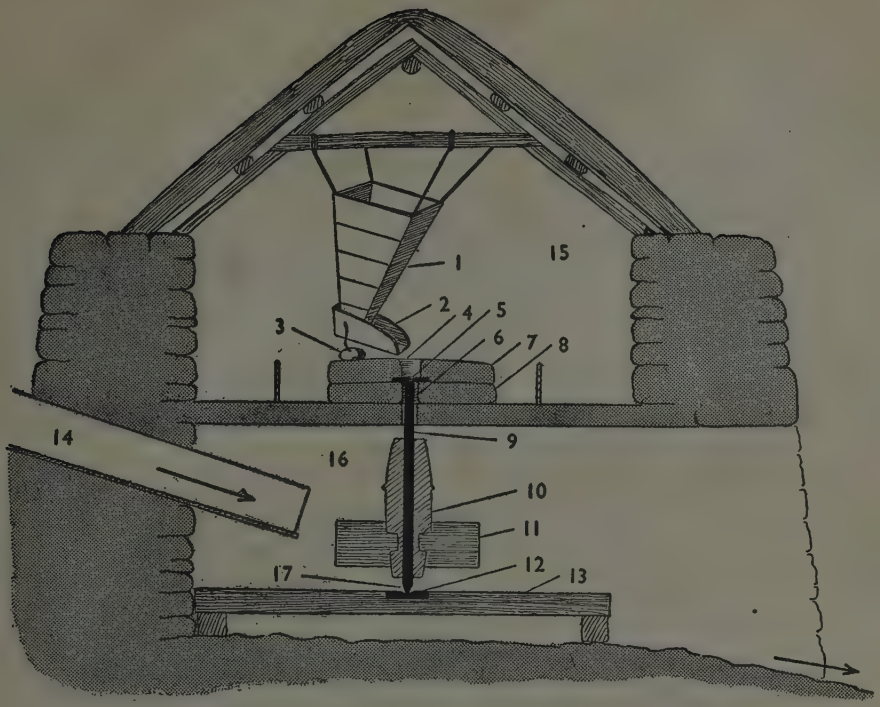


FIG. 5. SECTION OF VERTICAL MILL IN LEWIS, WITH NAMES OF PARTS
(Apparatus for adjusting level of upper stone is not shown)

	English	*Shetland* (*after* Goudie)	*Norwegian* (*after* Goudie)	*Gaelic* (*after* Goudie)	*Old Irish*
1.	Hopper	Hopper	Kverntina *or* Tina	Treabhailt *or* Sleaghag	Cup
2.	—	Shoe	—	Brog (=shoe)	—
3.	—	Clapper	Skaketein	Clabhan	—
4.	Eye	Eye	Kvernauga (=quern-eye)	Suil (=eye)	Comla
5.	Rynd	Sile	Sigle	Crascan an iarunn mhor (=cross-bar of the big iron)	Tual
6.	—	Grütte	Grøtte	—	Cub
7.	Upper Stone	Overstane	Oversten	Clach uachdair) (=upper stone)	Liae (=stone)
8.	Lower Stone	Understane	Understen	Clach iochdair (=lower stone)	Indeoin (=anvil)
9.	Spindle	Spindle	Spenol (Spenvol)	Iarunn mhor (=big iron)	Milaire
10.	Shaft	Tirl	Kall *or* Kvernkall	Bodach a' mhuilinn (=old man of the mill)	Mol (=shaft)
11.	Vanes, Floats, *or* Paddles	Feathers	Spjeld *or* Fjøl	Sgiathain (=wings)	Oircél (=trough) *or* Sgiatha (=wings)
12.	—	Ground-sile	Grundmusa	—	—
13.	—	Sole-tree *or* under-balk	Grundskida	—	—
14.	Chute	Trough	—	Amair (=trough)	—
15.	—	Ludr	Ludr	Leibhinn	—
16.	—	Under-house	—	—	—
17.	Gudgeon	—	—	—	Ermtiud (=spike)

down by a trough strikes, and gives motion to the upper stone, which, by a beam of iron, is joined to the centre of the water-wheel ' (40).

A cluster of vertical mills was reported to have existed in the neighbourhood of Hawick in Scotland, no fewer than 51 being noted within a radius of about eight miles (41).

Our quest takes us to the Western Isles and Hebrides, it being very exceptional to find evidence of mills of this type on the mainland. They existed formerly in the Isle of Colonsay under the name *muileann dubh*, or ' black mills ' (42), and there were three in the parish of Kilninian in Mull in 1795, called by the same name (43). They were common in the Outer Hebrides, particularly in Lewis, where they have frequently been described (44). It is probably not much more than ten years since the last one in Lewis—at Shawbost—was in actual use, for the writer examined this mill in 1937, and found it in an incipient state of decay (PLATE I). The Lewis mills are built in the same style as the ' black houses ', with a thick, low wall of dry stones, without gables, and surmounted by a low-pitched roof of thatch which rests on the inner edge of the wall (45) (FIG. 5).

The same kind of mill is also very common in the Faroes (46) and in the Shetlands (PLATES II and III), those of the latter group being too well known to require further description here (47). Suffice it to say that Sir Walter Scott stated in his diary (4 August, 1814) that there were then 500 such mills in Shetland, while the Ordnance Survey shows 36 in the parish of Dunrossness alone. Some of these mills have been worked in recent years, and one was shown working in the film ' The Edge of the World ', which was shot in Foula (Shetland) a few years ago, purporting to re-enact the evacuation of St. Kilda.

Curiously enough, these mills have completely disappeared from Orkney, perhaps as a result of the oppressive measures of Lord Robert Stewart in 1575, though the remains of one could still be seen in 1886 on the hillside of Birsay (48). At least four vertical mills have been reported in Caithness and Sutherland (49), the former shire having been in particular an area of Norwegian domination. But it is when we pass round eastwards again to Norway itself that we find the vertical mill to be still the normal means of grinding grain in the country districts. Countless little timber-built mills may be seen beside mountain torrents everywhere, fed by short mill-races which are often cleverly formed from wooden planks, just sufficient to divert a stream from the torrent and to direct it at will against the vanes of the mill-wheel (PLATE IV).

The same mills are also used in Sweden, but it is a noteworthy fact that there is no evidence of their ever having existed in Denmark.

The details of mills found in all these districts are so similar that it would be tedious to reproduce them all. In fact the only differences seem to be due to such local factors as the available building material and the local building customs. In the more modern examples certain improvements have been introduced, such as an ingenious device for

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[40] *Gibson's Camden*, II, 1448.

[41] Bennett and Elton, op. cit., II, 22.

[42] *Proc. Soc. Ant. Scot.*, 1881, XV, 135–6.

[43] *Stat. Acc. Scot.* (Kilninian), XIV, 149 (quoted in *Proc. Soc. Ant. Scot.*, XX, 285).

[44] See Bennett and Elton, op. cit. II, 19–22 ; *Proc. Soc. Ant. Scot.* XX, 284–5.

[45] ANTIQUITY, 1938, XII, 264–73.

[46] Landt, *Faroe* (1810), 293 (quoted by Bennett and Elton, II, 18).

[47] The classical description is that of Gilbert Goudie in *Proc. Soc. Ant. Scot.*, 1886, XX, 257–97.

[48] ibid. 282. [49] ibid. 282.

adjusting the level of the upper stone, so as to grind fine or coarse meal (50). But the mill itself is essentially and strikingly the same, whether it is depicted in Mediterranean lands or seen working in the far north.

In some areas, as in Persia, Turkey and Ireland, the vanes of the water-wheel are relatively long and narrow, with concavities at the end, so that they resemble spoons or ladles. Elsewhere, as in Lewis, Shetland and Norway, they consist of more or less square flat boards, usually set slightly obliquely, so as to catch the full force of the water as it falls.

In the published illustrations of vertical mills in Persia, the Levant and Spain, the mill works in each case in an anti-clockwise direction, whereas from Ireland to Norway these mills invariably work clockwise. It is possible that the northern superstition that an anti-clockwise turn (' widdershins ') is unlucky may have had something to do with this change.

The vertical mill is essentially an element of peasant culture; each mill is the property of an individual farmer or else is owned jointly by several farmers who use it in turn. There is no professional miller associated with them, for their mechanical efficiency would not be adequate for milling on a commercial scale. In reality, they may be regarded as mechanized querns, and though grinding slowly, they are sufficient for the needs of peasants who grow only enough corn to supply their own households. As a rule the mills are used only during the months following harvests. Often the door of the mill, like that of the church, stands open to all, and each farmer carries thither his own grain, sets the mill in motion, and returns later to fetch the meal.

Nomenclature

The writer has previously pointed out that as far as querns are concerned the terms used in Europe are all derivatives of two Indo-European roots, viz., one used in northern Europe represented by the English ' quern ', and one used in southern Europe represented by the Latin *mola* (51).

When water-mills were still a novelty their distinctive feature was emphasized in the names given to them, such as Strabo's *hydraletes*, or ' water-grinder ', and Vitruvius' *hydraula*, which is probably an error for *hydraletes*, as *hydraulus* means a water-organ. Palladius in the 4th century, recommending the construction of water-mills to replace animal and slave labour, calls them *aquariae molae*, or ' water-mills '. When in the later Empire water-mills had become the normal means of grinding corn to the exclusion of all else, the names adopted for it no longer contained direct reference to the motive force behind them; instead of this certain derivatives of the word *mola* gradually came into general use, viz. particularly *molina* and *molendinum*. It is from the former of these that the word signifying a mill in practically every language in Europe has been derived, including the English ' mill ' itself (52), and, so far as the writer is aware, these words are applied equally to the primitive vertical and the more developed Vitruvian mills.

Provisional Conclusions

Of the two varieties of water-mill, that possessing a vertical shaft, being the more primitive, is presumably the earlier, while that of Vitruvius, having a horizontal shaft and gears, seems to be an engineer's improvement of the primitive form.

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[50] ibid. 275. [51] Antiquity, 1941, xv, 31.

[52] Robert MacAdam lists 30 such words, all derived from Lat. *molina* (*Ulster J. Arch.*, 1856, iv, 6).

The vertical mill is essentially an instrument of peasant-culture, being just a mechanized quern ; the Vitruvian mill, on the other hand, was developed by an urban culture and, while frequently serving peasant communities, has lent itself to milling on a commercial scale.

While evidence as to the distribution of the two kinds of mill is inevitably incomplete, it is possible to draw tentative conclusions from the facts that are available.

From the last half of the 4th century onwards the use of the Vitruvian mill became general in Rome and throughout the later Empire, whence it appears to have spread northwards into Germany, probably as a result of the barbarian conquest of Rome. Ultimately its use spread thence to northern France and England.

The place and date of origin of the vertical mill, however, cannot be determined on the available evidence. Its distribution, past and present, so far as we know it, is a curious one, for it conforms to two very ancient trade-routes which meet at the eastern end of the Mediterranean (FIG. 6). Eastwards, these mills have been found in Persia, Turkestan, and western and northern China, a distribution which corresponds to the Central Asian caravan route, which, as is so vividly described by Miss Cable and Miss French (53), has been a channel of cultural interchange between East and West from prehistoric times down to the present day. This route passes south of the Caspian Sea, follows the Oxus through Bactria and over the Pamirs, and so by Kashgar and Turfan to Hami on the borders of Mongolia, whence you may travel either eastwards to Kalgan in North China, or southeast through the province of Kansu.

Westwards the distribution of the vertical water-mill corresponds with the Mediterranean–Atlantic sea trade-route by which the megaliths were brought to western and northwestern Europe, and this distribution helps to emphasize the fact that the western sea-ways did not cease to function with the passing of the megalithic phase of culture. Vertical mills have been recorded in Syria, Greece, Italy, Spain, the river Garonne, and Ireland. As far as our information goes, Spain or southwest France are the only parts from which Ireland could have obtained this mill, and bearing in mind the close connexion that has subsisted at various times between Spain and Ireland, there is nothing improbable in this suggestion, especially if the introduction of the vertical mill into Ireland took place before the Vitruvian mill reached England from the southeast (54). This would also explain the fact that the vertical mill reached Ireland complete with its Latin name, *molina*, which became *muilinn* in Old Irish.

When the Vikings from Norway colonized Ireland they found the vertical mill already there, and it was very evidently they who adopted it and extended its use throughout their northern dominions. It is indeed only to be expected that the Dalriadic Scots had already taken it over with them to southwest Scotland ; if so, little trace of it has survived, unless it be at Hawick (55). But the distribution of the vertical mill eastwards and northwards from Ireland corresponds faithfully with that of the Norwegian

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[53] Mildred Cable and Francesca French, *The Gobi Desert* (London, 1942), 206–12.

[54] This view is compatible with a literal acceptance of the story that Cormac MacArt introduced the water-mill into Ireland in the 3rd century.

[55] P. W. Joyce suggested that water-mills may have been introduced into Iona by St. Columba, because Adamnan, about 697, says : ' A cross was erected and fixed to a mill-stone, which may be seen to this day ' (Crux molari infixa lapidi :—Adamnan, III, xxiii). But there are no streams in Iona capable of working the most diminutive water-mill. The use of a mill-stone as a base for a cross has been noted in Tory Island, off the coast of co. Donegal (*Ulster J. Arch*, 1853, I, 143, 146), and the practice may very probably represent the survival of a fertility cult.

dominions, being confined to Man, the Western Isles, Caithness and Sutherland, Orkney, Shetland, the Faroes, and finally Norway itself. By way of contrast it is noteworthy that no trace of this mill has been found in Denmark or the parts of Britain that came under Danish control.

It would thus seem probable that this primitive mill was invented at some point along the line that extends from China across Asia and south Europe, by Spain and Ireland, to Norway, but at what point we cannot say at present. As far as the Mediterranean world is concerned there is nothing to indicate its presence there before the first century B.C., and one gains the impression that it may have entered that world from the east. One would not be at all surprised if it were to turn out that the invention of the vertical water-mill originated in the ingenious brains of the Chinese. But we

FIG. 6. APPROXIMATE DISTRIBUTION OF THE VERTICAL MILL, WITH CENTRAL ASIAN AND ATLANTIC COAST TRADE-ROUTES

have still to learn how and when the rotary principle embodied in the quern reached that distant land.

Mill-race and chute must always have been essential features of the vertical mill, and they suggest that this mill may have originated on some rocky torrent where the stream was broken up by boulders into separate currents which formed little waterfalls as they dashed over ledges of rock. Such cascades could be utilized to turn the ' ladles ' of the horizontal wheel, but would function more satisfactorily if controlled by timber planks and sluice. This would naturally lead on to the provision of an artificial channel where such natural facilities did not already exist.

The Vitruvian mill, on the other hand, originally had an undershot wheel and needed no mill-race, dam or chute, but the overshot wheel, which required these devices, had appeared by the 5th century in Greece. It seems possible that this improvement in the Vitruvian mill may have arisen as a result of borrowing the idea of the mill-race and chute from the primitive vertical mill.

Four of the photographs illustrating this article have been lent to me for the purpose, and I therefore have pleasure in acknowledging my indebtedness to Mr W. P. D. Stebbing for plate III, and to my uncle, Mr H. B. Curwen, for plates II and IV.

BIBLIOGRAPHY

The following are classical works of reference in connexion with this subject :

RICHARD BENNETT *and* JOHN ELTON, *History of Corn Milling*, vol. II (London and Liverpool, 1899). This deals very fully with all aspects of water-mills and is a treasure-house of facts.

GILBERT GOUDIE, ' On the Horizontal Water-mills of Shetland ', *Proc. Soc. Ant. Scot.*, 1886, XX, 257–97. By ' horizontal mills ' Goudie means mills with horizontal wheels and vertical shafts, hence the present writer considers ' vertical mills ' to be a more descriptive term. This deals with the subject in great detail and is well and fully illustrated.

ROBERT MACADAM, ' Ancient Water-mills ', *Ulster J. Archaeology*, 1856, IV, 6–15. A pioneer paper.

J. P. O'REILLY, ' Some Further Notes on Ancient Horizontal Water-mills, native and foreign ', *Proc. R. Irish Acad.*, 1902–4, XXIV, Sect. C, 55–84.

P. W. JOYCE, *The Social History of Ancient Ireland*, vol. II, chap. XXV, ' Corn-mills '.

Archaeological Research in West Africa*

by A. J. Arkell

Commissioner for Archaeology and Anthropology, Anglo-Egyptian Sudan

THE pilgrimage to Mecca made on foot across Africa from west to east between the desert and the tropical forest keeps many West Africans in close touch with the valley of the Nile. The pilgrims follow a route along which culture must from the earliest times have been spread by refugees, traders, military expeditions and the like. (In these latter days motorized convoys of West African troops and aerial reinforcements for the Middle East have followed the same route).

Over twenty years' service in the Anglo-Egyptian Sudan (of which twelve years were spent in Darfur, where the cultural and political influence of West Africa was strong in medieval times, and is still felt today), has left me much interested in West Africa, although I have never been there.

Owing to this lack of first-hand experience of West Africa I cannot be dogmatic about the intrinsic value of the archaeological discoveries to be expected there. I have no doubt, however, that archaeological research can supplement written records to a very considerable extent in establishing the history of the region. Indeed West Africa is more backward in archaeological research than many other African territories, and such research cannot fail to throw light not only on its history but on that of many other regions, for until all cultures and civilizations have been investigated and studied, the influences responsible for the history of any one area cannot be fully appraised.

This will certainly be the case with the Old Stone Age, with regard to which work done in East and South Africa has already thrown much light on the Stone Age in Europe. Certain sporadic finds reported from Northern Nigeria, Belgian Congo and French N.W. Africa make it clear that work waiting to be done in West Africa will throw a flood of light on the Stone Age in North and East Africa, and no doubt on the Stone Age in Europe as well.

Work done on the neolithic period in Spain before the present war indicates the probability of considerable contact between Europe and North Africa in the days when man began agriculture and pot making. It is most unlikely that West Africa was not influenced, and, if it was, work done there will be essential to a full synthesis of the history of that period, about which so much remains yet to be learnt. The origin of pottery, for example, has not yet been discovered. Much has recently been learnt about the predynastic cultures of Egypt, and one strain at least in that culture is likely to have entered Egypt from the south, as indeed Egyptian legends held. Pottery may have been invented in East Africa, where a very early date is claimed for it; but work done in the Anglo-Egyptian Sudan appears to indicate that certain influences from the west may have made themselves felt in the Sudan at an early date, and indeed the geographical connexion between West Africa and the Sudan (to which I have already drawn attention) makes it not improbable.

There are records from dynastic Egypt that cause me to think that during its great periods trading expeditions sent out by the Pharaohs reached the valley of the Niger,

* A memorandum submitted by request to the Commission on Higher Education in West Africa, and printed here by kind consent of the Commission and of the Sudan Government. The author adds a note explaining that it was written while on leave in Eire, away from all his notes and books of reference; he is now in the Sudan and unable to see the proofs.

and that one day archaeology may discover some evidence of them. Cultural influences from ancient Egypt no doubt reached West Africa as well. There are polished stone axes of a peculiar type from the Cross River, Nigeria, in the British Museum that I believe had their prototype in the two-lugged bronze Egyptian battle-axe of 2000–1000 B.C., to which they can be linked by other similar stone axes from French North Africa and the Sudan.

The Minoan civilization of Crete, about which nothing was known until early in this century, may one day be found to have influenced the culture of places as far afield as Darfur; and since Minoan Crete was a maritime power it may well have influenced West Africa, as certainly to some extent the Phoenician colony of Carthage did at a later date.

North Africa became part of the Roman Empire. At least one Roman military expedition probably reached Lake Chad, and it is possible that to some extent the influence of Rome may have been felt in West Africa.

There is some reason to think that early in the Christian era there was a trans-African trade, which carried gold from the Niger valley through the emporia of Meroe and Axum to the Red Sea and so to India or the Mediterranean. In this trade the Tuareg with their camels were probably the main carriers.

The few fine portrait-heads of pottery and bronze from West Africa which have been published in recent years, and which are certainly of a high artistic order with an intrinsic value of their own, have their closest parallel so far in funerary portrait statue-heads of sandstone from Meroe in the Sudan. Meroe is shown by the as yet almost unpublished excavations of Garstang and Reisner to have been a most important civilizing centre in North Africa for perhaps a thousand years (650 B.C.–A.D. 350), and it must have introduced the Iron Age to Africa.

When Meroe was destroyed by Axum in A.D. 350 it was replaced in northern Sudan by a strange blend of Meroitic–Byzantine civilization, known at present to archaeologists as the X-group. There is some evidence that after the destruction of their capital by the invaders from the east, the royal family of Meroe may (naturally) have migrated westwards. If they did, they must have kept to the road between the desert and the forest, and so might be expected eventually to have arrived in West Africa. Bronze lamps said to have come from ancient graves in the Gold Coast, of which I have photographs which I hope to publish after the war, were certainly inspired by originals from Byzantine Egypt similar to those found in X-group graves in the Sudan, and French accounts that I have read of large tumuli in the Niger area leave me with little doubt that they can be proved to have close cultural connexion with the X-group. Indeed the obvious links between these bronze lamps from the Gold Coast, the Niger tumuli, the X-group in the Sudan and Byzantine Egypt, convince me that archaeological research in West Africa can discover evidence that will help to complete the picture of this period which must have been an important one in the history of the introduction to Africa of civilizing influences. Such research will probably bring to light other works of art of high intrinsic value similar to the portrait-heads already published, which prove that West Africa was not always content with servile imitation of a novel art introduced from the east, but had its own contribution to make as well.

Nor are the Middle Ages likely to lack archaeological importance. Arab and arabicized refugees from Spain certainly took with them both Islamic and Arab art and culture to West Africa, where they make themselves at home at the courts of African potentates, and maintaining their connexion with the Mediterranean helped those potentates to benefit from inventions and discoveries made in the Mediterranean area

before most of Europe. For instance, the kingdom of Bornu in Northern Nigeria had an army equipped with firearms obtained from Tunis when the British army was still equipped with bows and arrows. With these firearms Bornu rapidly acquired a wide-spread empire which included in the east Darfur, now a province of the Anglo-Egyptian Sudan, and Selima, an oasis on the borders of Egypt. Thus through Bornu (and not as might have been expected through Egypt) the religion and law of Islam, the cultivation of cotton and manufacture of cotton cloth, the construction of mosques in red brick, etc., were introduced to Darfur and the central Sudan. The Darfur sultanate, which, when the Bornu empire broke up, grew out of the province that Bornu had administered; the Fung kingdom based on Sennar on the Blue Nile; and the contemporary kingdom of Abyssinia, all probably had more in common with the medieval kingdoms of West Africa than they had with medieval Egypt, from direct intercourse with which for a long time they were cut off by reactionary Christian kingdoms in Nubia and the northern Sudan, which blocked the narrow way to Egypt where the Nile passes through the desert.

There are imposing stone forts and other ruins of this period in the hills of Darfur that await detailed examination and research; and from the publications of H. Barth, C. K. Meek, Sir Richmond Palmer and others, I have no doubt that there are similar sites also of this period in West Africa that should be studied before the destructive progress of the present day obliterates the evidence that they can provide.

The well-known bronzes of Benin and the gold weights of Ashanti published by Rattray, show that West Africa at this period too could produce works of art with an intrinsic value of their own.

No doubt, archaeological research will one day help anthropology to throw a flood of light on the origins and growth of various African religions and beliefs, which without a full understanding of the administration of pagan areas is unlikely to be wholly successful.

The average educated modern African is interested only in the present and particularly in material progress; as is the average European from whom he takes his cue. Thus the politically minded African, with the mental instability of adolescence, is often dangerously impatient to try to attain in his own lifetime a utopia where, freed from foreign restraint, he can enjoy unlimited power and wealth. The revelation that his land has had a long history, that it has in the past perhaps more than once been in the main stream of civilization before falling into the backwater in which it finds itself today, can undoubtedly give an educated African a sense of proportion and balance which I know no other way of inculcating; and is—judged by practical short-term standards—the main justification for facilitating archaeological research in Africa in these difficult days. I would indeed go further and say that it is a reason why such research *must* be carried out and its findings interpreted to the educated African before it is too late. If it is delayed too long there is a danger of the African intelligentsia becoming irrevocably alienated from us, their foster-parents, whose duty it is to help them to fit into that community of nations which alone offers hope for the future of civilization.

I am sure that the best West Africans can be interested in this way in their own country and its history. I have already succeeded in so interesting some of the leading intelligentsia in the Sudan, despite the inevitable interference of the present war with all archaeological activities; and I have no reason to think that there is any essential difference in mental make-up between the West African and the Sudanese.

In both countries an adequate museum in which results of archaeological research can be clearly displayed so as to educate the inhabitants ' through the eye ', is essential before the interest of more than the exceptional minority can be aroused. Without such a museum unique historical evidence brought to light by excavation will be lost to

the country to which it is of special value. Objects found will go either to foreign museums, or, if retained in the country of their origin and not properly protected and preserved owing to lack of an adequate permanent home, will rapidly perish or be lost. Such a museum must also provide adequate storage for study collections and other facilities for research. The best museum of its kind that I have seen in Africa is the Coryndon Memorial Museum in Nairobi, although that museum is neither large enough nor sufficiently well financed. South Africa has already recognized the importance of linking archaeological research with higher education by its creation of the Archaeological Bureau of the Witwatersrand University at Johannesburg; and in Rhodesia the Rhodes–Livingstone Institute is, I believe, endeavouring to meet a similar need. I hope soon after this war to see a museum with adequate buildings and adequate finance closely associated with the university college that will before long be inaugurated in Khartoum; and I envisage a small faculty of archaeology, the best of whose graduates will become museum assistants and lecturers, inspectors of antiquities or independent research workers. They will best know how to communicate their interest to their fellow countrymen, and so ensure that they become interested in their own country and its history. Similar institutions must be needed in West Africa.

Research into the archaeology of a wide area in tropical Africa can, in my opinion, be carried out most satisfactorily on the spot. Archaeological expeditions from Europe or America usually suffer from lack of funds or lack of time, or both; with the result that their work suffers from being hurried; and if, as has frequently happened in the Sudan, they are unable to publish their finds promptly, the result of their activities may be disastrous, for the evidence they bring to light is lost or destroyed before it is published. They are also more often than not interested primarily in finding 'museum pieces', because they obtain most of their financial support from the great museums, which pay by results. Museum pieces in tropical Africa are frequently imported objects from a northern region, the history of which is comparatively well-known, and the importance of such objects is not their intrinsic value but the fact that they date the less showy indigenous objects with which they are found. Foreign excavators are therefore apt to neglect, and possibly even to destroy, the evidence as to early cultures which is provided by indigenous pottery, stone artefacts, etc., which may be of the greatest importance in working out the history of the region, although of little attraction to a foreign museum. African experience is also often necessary for the correct interpretation of African finds, and this will be forthcoming when an institution of higher education in Africa provides facilities for archaeological study and research, although it is the exception rather than the rule when such research is carried out by a foreign expedition.

Archaeological research is only worth doing—is indeed only constructive and not destructive—when the highest scientific and technical standards are applied to it. And if it is granted that for the reasons given archaeological research in tropical Africa is best carried out on the spot, it must be agreed that an institution of higher education can best provide facilities of the standard required.

West Africa has certainly had a long and varied history in the past, and I hope that facilities will soon be provided in that area for archaeological study and research, not only for the sake of the light that will certainly be shed on the past history of other parts of Africa and perhaps of Europe as well, by discoveries waiting to be made in that hitherto (archaeologically speaking) almost unknown area, but also for the sake of West Africa itself and the benefits that will accrue to West Africans from a knowledge of the past history of their own land.

The Rebuilding of London*

by R. E. M. Wheeler

THOSE who witnessed the fires of London in 1940 were occupied with other thoughts and acts than the contemplation of the past. Today remoter skies are aglow, and the quiet and cavernous places of London where busy offices once stood are already planned and regimented for reconstruction. No doubt, as often enough in the past, London will gain functionally if not artistically in the process; the new buildings will be higher and deeper than their predecessors, with air-conditioned basements carried far down into the native clay.

In the scheme of reconstruction, when revealed, no citizen of the British Commonwealth can properly avoid a close and critical interest. The antiquary, however deeply immersed in however remote a past, will then fail of his duty if he does not cast an eye upon the future. At the same time, however careless of the pit from which he is digged, no citizen—or Government—can on this momentous occasion rightly refrain from a brief and practical consideration of the past.

I have described the occasion as ' momentous ' and I use the term in a special sense. Hitherto the progressive destruction and rebuilding of London through the ages have raised an accumulation of building débris, floors, general vestiges of habitation—' buried history '—amounting in places to a depth of twenty feet under modern London. This accumulation, scientifically read, contains much of the raw material from which the life-history of our capital city may be reconstructed. The last general rebuilding, after the Great Fire of 1666, mutilated but did not delete this material. The forthcoming reconstruction of London on the other hand will obliterate it with complete finality. In rebuilding herself on this occasion London will destroy more of her history than has any single one of the many great fires which she has suffered in the past.

This loss is no small matter affecting only the archaic interests of a few students of history and archaeology. It is one which affects the ordinary citizen almost in as lively and intimate a fashion as do the problems of rebuilding. In London, as nowhere else in western Europe, have for nineteen centuries been concentrated the wealth and enterprise of a succession or mélange of European civilizations. From these multifarious roots have grown that great tree which is about to burgeon in a new spring. But the tree is a single growth and some understanding of the nature of its growth is both a duty and a necessity for the citizen with any sort of intelligent pride in his city and his ancestry.

The extent to which the subsoil is capable of revealing the works and days that have combined to the making of London has been shown more than once on scattered building-sites during the past generation. The great city established by the Romans—then already one of the five largest cities north of the Alps—is known to us only as a broken mosaic of which odd scraps have been picked up during intermittent building-operations. So little indeed do we know of Londinium that almost any addition to our knowledge will be of value. But we already have pointers. The vast extent of the Roman defences, which were three miles in circumference, and the immense basilica or town hall, with scarcely a

* This note was dictated by Dr Wheeler on the eve of his departure for India and has not been revised by him.—Ed.

rival in Europe for size, indicate something of the possibilities which await more adequate exploration. The early nucleus of the city was on the eastern of the twin hills, Cornhill. It so happens, however, that the western hill of Ludgate will be the more extensively rebuilt of the two, and here may be expected the vestiges of urban expansion in the richest period of Roman Britain, the second century A.D. Here too are hints that the major Saxon occupation of London supervened, round the spot where at the time of the Augustinian mission the cathedral church of St. Paul was first built. Of the formative period in which Roman London merged into medieval and modern London, authentic information is almost non-existent, and the possibilities latent in the reconstruction of this most vital part of the city cannot be exaggerated. Further east, near the Tower, a recent chance has already revealed a remarkable Saxon cross-shaft and a part of the structure of the early Saxon church of All Hallows, Barking. These are a mere earnest of the discoveries which may be safely promised in the vicinity of Ludgate and Cheapside.

A controversial element in the new lay-out of London will probably be the revised street-plan. What of the successive street-plans of the Roman, Saxon and medieval cities on which the plan of the future London will be based ? The evolution, or devolution, of the street-plan of the city is still a live problem, in regard to which our historical information is all too scanty. Now is the chance, nay the certainty, of recovering nearly a third of it before the final destruction of all evidence.

The map which is here published by permission of the Ministry of Information gives a summary picture of the vast opportunities which for the last time lie before the citizen of London with an eye to the past as well as to the future. For one reason or another something like a hundred acres will come into the scheme of post-war reconstruction. Once started, this scheme may be expected to proceed rapidly and the opportunity for a scientific examination of the history which will be disinterred in the process will be of the slightest. The matter is one worthy of national concern. Properly executed the work of examining the accumulated strata before they are removed finally from the site need not, and should not, delay the urgent work of rebuilding. But it must be carried out scientifically, systematically and with adequate funds. An important factor is that the Ancient Monuments Department of the Office of Works, which has already rendered unobtrusive service of the highest value in rescuing information from ancient and historic sites destroyed in various parts of the country by war-time operations, is capable of organizing the scientific direction of the work in collaboration with the City Authorities ; and it would be in accordance with the traditions of our public service in this country if a scheme of exploration begun and partially financed by the City received aid, not only technical but also financial, from national sources. The enterprise would thus, as is fitting, acquire something more than a merely formal recognition of its unquestionable national importance.

Above all, it is vital that the work be organized and begun in such time that it shall not be hastened beyond the proper pace of science. The task is not a small one. At stake is nearly two thousand years of accumulated material bearing upon the history and everyday life of the greatest city in the world, potential knowledge which can now be acquired for relatively modest cost but can never again be bought.

LONDON
HATCHED AREAS AVAILABLE
FOR EXCAVATION 1944
HOLBORN
FARRINGDON STREET
FLEET STREET
LUDGATE HILL
ST PAUL'S CATHEDRAL
NEWGATE STREET
CHEAPSIDE
QUEEN VICTORIA ST.
CORNHILL
FINSBURY CIRCUS
BISHOPSGATE
EASTCHEAP
INNER TEMPLE
BLACKFRIARS BRIDGE
SOUTHWARK BRIDGE
LONDON BRIDGE
TOWER BRIDGE
THE TOWER
R I V E R
T H A M E S
100 0 500 1000 2000 3000 FEET
SCALE OF FEET

facing p. 152

The Place of Archaeology in British Education

by Aileen Fox

In Antiquity, September 1943, Grahame Clark put forward an eloquent plea for the study of man as a basic feature of education throughout the world—to create an overriding sense of human solidarity such as can come only from consciousness of common origins ; this alone, in his opinion, can ensure the survival of civilization. He deliberately deferred consideration of practical details and concentrated on setting out ' the vast design ' covering education, like the Beveridge social insurance scheme, from the cradle to the grave. It is my purpose in this article to consider more closely what part British archaeology is fitted and ready to play in education in this country in the future. For if archaeology is to take its rightful place in school curricula, if it is to be in demand in Universities (where archaeologists mainly must be trained) and in centres of adult education, its role must be clearly defined and understood by archaeologists and educationists alike. Certain misconceptions must be cleared away—for example that archaeology is synonymous with prehistory, or the study of flints or potsherds—that it is a special subject, something ' extra ' like music or drawing in the old fashioned academy. Let it once be realized that it is essentially a *method* of recovering, studying and re-creating the past, a method that is open to all to use, and it will fall into place within the framework of our educational system. It will naturally be a method that is most used by other branches of knowledge concerned with the past, Classical studies, English Literature (1), and above all History.

The subject-matter of History and Archaeology is essentially the same, the past, and there is no dividing line, no fixed point in time where archaeology stops and history begins. The difference lies in the material and the approach, for as we all know, in general the historian relies upon documents, the archaeologist upon ' things '—that is the relics that survive from the past, man himself, his belongings, his handiwork. As a result of this difference, the historian is limited to the tract of time when written records are available, and there is thus a tendency in people's minds to consign archaeology to the preceding periods. But as Eileen Power (2) demonstrated in her characteristically vivid way, ' it is the greatest error to suppose that history must be something written down ', and the Norman motte, the manor house, the merchant's house, and the possessions of their occupants are all evidence of the social and economic state of the people, equally valid with the recordings of the clerks of the times.

Having then indicated the goal to which both archaeologist and historian are travelling—the fullest and most accurate knowledge of the past—it would be as well to consider more closely how the archaeologist proceeds, how he comes by his material and what he or she endeavours to do with it, though in so doing I am well aware I am covering familiar ground.

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[1] The combination of ' Literature, Life and Thought ' in the period papers of the English Tripos at Cambridge is a good example of such use.

[2] Eileen Power, *Mediæval People*, p. 149.

First the nature of the material itself, which, since it may be anything that has survived from the past, is exceedingly diverse. It includes, for example, things like human or animal bones, earthworks, buildings of stone, timber or brick, metal-work, sculpture, pottery from the crudest to the most highly wrought. It is limited, indeed, only by the chance forces of human destruction, and the slow forces of natural decay.

Archaeologists have this vast untidy heap of material placed before them in various ways ; by chance discoveries throughout the ages, in the course of which many individual objects have found their way into organized Museum collections ; by controlled discoveries, whether by field-survey on the ground or from the air, or by the method *par excellence*, excavation. Like the French maid in *Zuleika Dobson* (3) they set about ' making chaos cosmic ', sorting things into categories, into periods, into cultures, plotting their distribution, building up evolutionary and devolutionary series with the aid of the well-tried methods of association, typology and stratification.

To what end ? First and foremost to establish the sequence ; the past that archaeology seeks to recapture is essentially the past in order, and chronology is the vital framework on which all else depends. For the historical period the time sequence, with its dates of kings and events is well established, save from minor details which are still subjects for research. But the archaeologist, working in the periods when written record is scanty or non-existent, is perpetually concerned, like the centipede, with the problem of ' which came after which ', preliminary to fixing such sequences in absolute time expressed in terms of years. It is of course uncertain whether absolute dating ever will be achieved for the more remote periods, for archaeological methods even now are blunt and lack the fine precision of a chronicle. As Crawford once said (4) ' we deal wholesale in time '; a century or may be more in the New Stone Age or the Bronze Age in Britain, 25–50 years in the Early Iron Age, a decade or so in the Roman period. For as we proceed through the Ages, more material has survived (evidence of a more ample mode of life) and archaeology is thereby enabled to work to narrower limits. Ultimately it can begin to create the outline of political history, as in the last phases of the Early Iron Age, with the aid of scraps of documentary history that survive from classical times. But archaeology by itself cannot recapture the events of a single year, and once the period of ample record is reached, the problem presented to our science is altered ; the piece (whether pottery, building or art object) has to be fitted into the established chronology—i.e. dated—rather than used to create an approximate chronology.

Once the place in time has been determined, either relatively or absolutely, a second objective takes the field ; that is to re-create as fully as possible the life of man at that period—where he lived and how, his dress, tools, weapons and utensils, his occupations, pleasures and means of sustenance. In this respect the material of archaeology never can be supplanted by the written record, for instance ; medieval church and manor or late 17th and 18th century furniture are, in their way, as good witnesses to the way of life of those periods as are the Paston Letters or Congreve's *Way of the World*. Each corroborates and amplifies the other ; neither can be wholly understood in isolation, nor if interpretation is sought from present day thought or requirements. In this respect archaeology must be regarded as an important contributor to social and economic history. In the prehistoric period it is limited in one respect, rarely is it possible to isolate the individual, and the material must be used in interpreting the life of a group—the family unit of the hut, the kin group of the barrow builders, the tribal unit of the

[3] Max Beerbohm, *Zuleiku Dobson, or an Oxford Love Story*, 1922.

[4] See *Man and his Past*, p. 37.

hill-fort, village or Romano-British town, the loosely-knit racial or regional group termed ' culture ' or ' community '.

A part of this process of re-creation is inductive, because the material inevitably is incomplete, but it is a fundamental mistake to think that the archaeologist's work ends with the uncovering of ruined walls and refuse pits, however accurately they or their contents may be recorded. In truth, as the majority of field workers are aware they have only begun, and not until each item—structure, potsherds, small objects, zoological, botanical and geological remains—has been studied, and with the aid of specialists, interpreted and used to build up the picture of communal life and its setting in the past, can they be said to approach completion. ' Can these dry bones live ? ' is the question for which an affirmative answer must be forthcoming.

This takes us to the third main objective. Neither History nor Archaeology should be content simply to rebuild the past, whether chronologically, politically or socially—their justification as an Art (and Clio was numbered among the Muses) is their power of interpretation. Each attempts to comprehend and evaluate the fortunes of the human race. The historian studies the rise and fall of nations, of personalities, and the human and economic urges that are the causes or sources of power. The archaeologist in the period before written record is concerned with the movements of people; the expansion and dominance of a culture as evidenced by distribution patterns ; cultural progress expressed by mastery over environment, by increased technical skill, by the rise or fall in the standard of living. He too must seek to ascertain causes, to see why certain areas continually attract settlement and why others are shunned ; why wealth consistently accumulates in certain districts, sporadically in others, never in some ; how advances in knowledge such as metallurgy, or agriculture, affect his progress and bring in their train increased material resources, increased population and so pave the way for the next step forward. And because in prehistoric times man was infinitely more at the mercy of his environment, hedged by forests, the prey of wild beasts and natural forces, limited in his communication and transport, and above all lacking in outside knowledge, therefore the workings of economic forces can be seen more clearly than in historic times, when they may be in part masked by human ingenuity. Indeed it is true to say that in the early periods the archaeologist is in a position to know more of certain aspects of prehistoric life than any individual who was living at the time. Again in the prehistoric ages the periods of time are in general, longer and in consequence progress becomes easier to assess ; when less is known, minor set-backs tend to be obscured and on occasions it is easier to see the wood than the trees. But such assessment of progress, of values demands the laborious collection and comprehension of a large range of facts and should not be confused with superficial generalization, the easy product of the amateur.

Such then, in brief are the means and ends of archaeological research. What can be said of its educative value ? How does it train or develop the human mind in youth ? What can it offer to the adult ?

For both, the archaeological approach to the past provides contact with material things, a needed change today from the abstract or imaginary world of books. It demands a trained eye that can be enabled ultimately to perceive the significance of a ' straight joint ', a variation in mortar, a change in soil colouration or contour, the profile or texture of pottery, the attributes that identify a classical figure or scene. To the trained eye must be added visual memory, so that comparison may be made between mental images ; such memory is usually acquired or strengthened through drawing or planning, however unskilled the product. From this gain in visual power will come two things badly needed in the 20th century : first an appreciation of craftsmanship, for the

understanding how a thing is made—whether building, statue or palstave—provides the explanation of much of its appearance: second, a growing sense of aesthetic values based on visual pleasure experienced at first hand, not confined to *objets d'art* but embracing all man's creations.

The mental qualities called for in archaeological studies are obvious from the previous survey; close reasoning and inductive powers are called for in the chronological aspect, imagination and common sense in the social aspect, logical and philosophical qualities in the interpretative aspect. All the higher faculties, in fact, will be stimulated, exercised, and hence developed. Moreover, the nature of the material is such that a check on loose thinking or perception is constantly provided, and the motto of one of the older Antiquaries (5) ' We speak from facts, not theory ' might well serve for the body of archaeologists at the present day. It may perhaps be thought that such claims are extravagant, and could only be substantiated in the case of the matured research worker. But the processes of thought involved could easily be made more widely known; it should be the aim of school instruction not to impart a miscellaneous body of facts to be produced for examination purposes, labelled *Prehistory* or *Medieval Architecture* for example but to open children's eyes to the past existing in the present, to demonstrate how the place of each object in the time-scale can be determined, and how each contributes to our understanding of former ways of life and so helps to explain our own.

Finally, what practical steps are necessary to ensure better recognition of the archaeological approach in British education? First and foremost the teachers, of History and Classics especially, must have their interest awakened and be trained in archaeological aims and methods so that they may make use of archaeological material in the local museum as readily as books in the local library on appropriate occasions. It is manifestly impossible for the small body of British archaeologists to be metamorphosed into instructors of the young, but it is they who must be ready, if and when called upon, to co-operate in teachers' training, or refresher courses. The schools must be willing to provide the equipment that will be demanded; visual aids like the lantern, epidiascope, the 16 mm. film projector (maybe ultimately television sets); a room where specimens can be stored, handled, drawn, where time charts, an exhibition panel and changing illustrations can be mounted are some *desiderata* that come to mind. The authorities must encourage extra-mural activities, museum visits and visits to neighbouring antiquities, which cut across time-tables in inconvenient ways and so are apt to be shelved or put into ' free time ' on a voluntary basis.

Collaboration between the museums, the organized storehouses of archaeological material, and the schools is vital; in some regions this is already well established. (The schools' service of Leicester is an example). Elsewhere it is wholly lacking, and a teacher coming to the local museum for guidance, for loans, or with a class for a visit would only be discouraged. But the days of the dirty derelict over-crowded museum are, I think, numbered, and curators are increasingly aware of their educative responsibilities. A schools' service run from the museum by a specially appointed officer (6) it may be hoped, will be found in the area of every Education Authority of the future. In this way teaching collections of specimens and photographs can be circulated, and class visits arranged for systematic study (' little and often ' being a golden rule for the vast majority of purposeful museum visitors of all ages).

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[5] Sir R. Colt-Hoare, *Ancient Wiltshire*, I (1810).

[6] Archaeology, of course, will only be one of his or her ' services ' in the majority of museums.

I have stressed archaeological teaching in the schools (primary and secondary) because that is the place from which far-reaching and cumulative results will accrue. From the schools a proportion of the best students go to the Universities to pursue their chosen subjects, among whom Archaeology will find its adherents because a taste for it has been inculcated in early years. The vicious circle will thereby be broken, in which students coming up are deterred from the subject because they are ignorant of its meaning since it has not been taught in the schools, and because if they do select it, it will be of 'no use' to them in a teaching or other career. Archaeological departments could then look forward to a more prosperous future with increased numbers, and a greater proportion of students of high quality. The Universities, then, in co-operation with field workers in the vacation (7), should turn out a growing number of trained 'apprentices', ready to help with the tasks of research, including that of excavation, ready to fill posts of assistant curators in the museums, to act as custodians of national monuments, to teach, and thus and in other ways, to make good the shortage of workers of which every branch of our studies must today be conscious. This is the case of the professional archaeologist or art-historian; their numbers are unlikely to be excessive as the requisite practical and intellectual qualities are apparently a rare combination.

But a greater benefit will come about than a mere increase of professionals. There will be a growing nucleus of informed public opinion to replace the apathy and ignorance and misconceptions so prevalent in all classes of society at the present day. When the relics of the past are widely known and understood, they will be assessed at their true value; the 'ivy-clad cottage' will no longer masquerade as an object of architectural merit, whilst the fine 18th century house front is bisected for the insertion of a plate-glass shop window in our towns, nor will the stone merchants be able to undermine or quarry away Hadrian's Wall, or the dwelling place (8) of the legendary donor of the site of St. David's Cathedral. Knowledge and understanding of our cultural heritage learned in youth will ensure that the conservation of the best of the past will go along with zeal for the creation of the 'Brave New World' of the future.

[7] A Long Vacation term of field work should form part of a University course in normal times.

[8] Clegyr Boia, Pembrokeshire.

Notes and News

THE COUNCIL FOR BRITISH ARCHAEOLOGY

Most Archaeologists are already aware of the recent formation of the Council for British Archaeology, which has been set up as a central body to express the views of those connected with archaeology, particularly with reference to post-war planning and development. The first meeting of the Council was held on 8 March 1944.

Every effort has been made to ensure that the Council is fully representative, as it is clear that it is only by showing that there is a strong body of opinion behind claims that archaeological matters should be considered in connexion with rebuilding and development, that due attention can be secured for them. The national societies concerned with archaeology and kindred subjects, the national museums, and universities including archaeology in their curriculum, have direct representation on the Council. The county archaeological societies, again including those dealing with kindred subjects, have been asked to form Regional Groups, which have a dual function—to elect representatives to the central Council, and to deal with matters of local rather than national significance. The Scottish Regional Group elects nine representatives to the Council, the Welsh Group six, and the eleven English Groups three each. In addition, the Regional Federations of Museums elect one representative each.

The most immediate task for the Council is that connected with post-war rebuilding and development. The task of ensuring that in the rebuilding of bombed towns, and in the development of new areas such as housing estates and roads, valuable archaeological remains are not destroyed without record is a tremendous one. It is in fact a task far beyond the resources of any individual society, both financially and administratively, and one which can only be attempted by the State. The responsibility of the State for the preservation and excavation of the material remains of the past is recognized by the Ancient Monuments Acts, and powers have been given under them to the Ancient Monuments Branch of the Ministry of Works. But to ensure that adequate finance is provided, sufficient skilled temporary staff engaged, and sufficient information given to enable excavation schemes to be prepared, the full weight of public opinion will have to be brought to bear.

In connexion with this, the Council has a number of functions. In the first place, it must act as the organ of this public opinion, and offer its advice and co-operation to the appropriate authorities. In the second, it must, either through the Central Council, or through the Regional Groups, draw attention to those areas in which ancient buildings and archaeological remains will require attention in any planning schemes. Thirdly, it must, through its Regional Groups and their constituent organizations, make arrangements for the recording and reporting of unexpected finds which may turn up in building operations, quarrying, or similar undertakings. Fourthly, it must co-operate in the provision of experts to undertake excavations and surveys, since this task will be too vast for the permanent staff of the Ancient Monuments Branch.

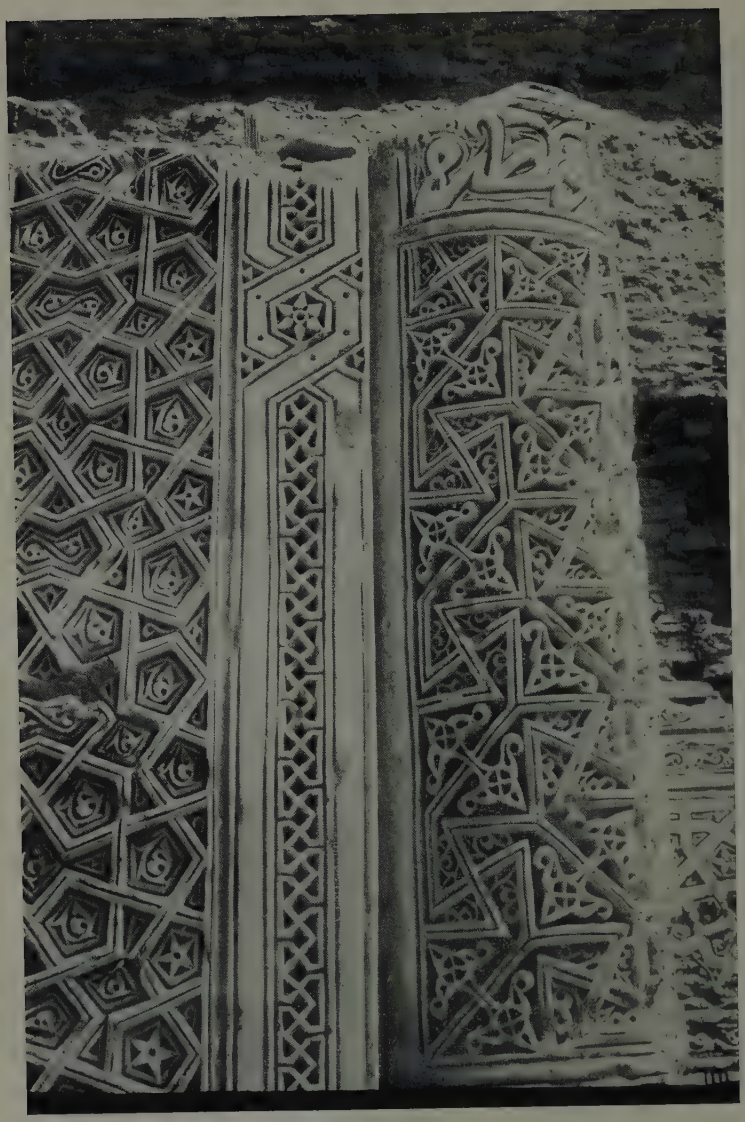
This immediate work of the Council is however only a beginning, though its urgency has been largely instrumental in calling the Council into being. There are many problems which will benefit from co-operative action and consultation. One of the

PLATE I

THE WINTER ROOM OF A HOUSE IN SAMARKAND

facing p. 158

PLATE II



TERMEZ PALACE : FRAGMENT OF STUCCO CARVING

most important of these is the contribution which archaeology can make to education, which is a subject to which too little attention has been paid in the past, and which is so intimately connected with the justification of archaeology as a study. It must be considered, too, to what degree it is necessary to rationalize and direct research, in order to conserve financial resources which are bound for many years to be restricted, and whether this can be accomplished without curtailing that individual initiative which is so essential. These, and many other similar problems, will occupy the attention of the Council during its next sessions.

It is intended that the Council shall meet at least annually, and when normal conditions are sufficiently restored that these meetings shall take the form of Congresses held in different parts of the country. Meanwhile the meetings are purely for business, and are for the time being taking place in London, which is felt to be most convenient in war-time. An Executive Committee has been appointed to deal with urgent matters. The President of the Council is Sir Cyril Fox, and the Secretary, Miss K. M. Kenyon, Institute of Archaeology, Inner Circle, Regent's Park, London, N.W. 1.

THE REVIVAL OF ANCIENT TRADITIONS (PLATES I–II)

The ancient cities of Central Asia, Samarkand, Bukhara, Khorezm, Merv and Urgench are rich in fine examples of architecture. Many of these—the medreseh of Shir-Dor (' lion's gates '), the mausoleum of Shakh-i-Zenda, the mosque of Bibi-Khanim, the mausoleum of Gur-Emir with the relics of Timur and his grandson Ulug-Bek, are famous the world over. In a very remarkable way the architecture and art of Central Asia has continued the ancient traditions of its skill down to this day. The old masters living and working today in all the cities of Central Asia were taught by their fathers, and they in their turn are now imparting this knowledge to the younger generation.

In Uzbekistan everyone knows Shirin, the famous craftsman, the representative of the ancient family of Muradovs. Whole sections of Bukhara were built by different generations of this family. The renowned Bukhara master, the venerable Ibrahim Gafisov who built the palaces of the former emir, is still alive. The master craftsmen of carving, Shamsudin Gafurov (who has also made several beautiful models of ancient memorials), Kuli Djalilov, Akram, the artist decorator Mirbabaev and others, are widely known in Samarkand. These elders belong to that category of artist craftsmen, extinct in the West, who are now only known through the biographies of the Renaissance masters. These artist craftsmen scorn rest, and refuse the pensions which are provided for them. Their art is their life, from which only death can separate them. The works of these masters adorn the homes, tea rooms and buildings in all the towns of Uzbekistan, equally in the old and new city quarters (for instance, the interior of the Samarkand museum).

In order to maintain and preserve this art, special courses have been organized in Samarkand, in the medreseh of Shir-Dor, for the purpose of training craftsmen in the folk arts of engraving and carving on plaster and wood, as well as in decorative art. Under skilled traditional masters the Uzbek children, boys and girls of 12–16 years of age, are mastering the art of their people, combining these studies with general education. Usto Shirin and Muradov have been invited specially from Bukhara to direct the carving workshops.

These workshops of folk art are extremely interesting. Like the atmosphere generally, the methods and approach to the subject are quite different from those found in art schools. The workshop gives the visitor the feeling of being back in one of the Renaissance bottegas. This is exactly how the workshops of Verrochio, Ghirlandaio,

Botticelli, must have been carried on. The masters wear workmanlike leather aprons. They are not called by their family names, nor by their titles, but simply usto Shirin, usto Akram, as once it was messer Andrea and messer Domenico. These children master their craft from childhood. Here, too, their artistic taste is developed. The relations between master and pupil are simple, almost patriarchal. Uzbek young girls (who would not have been allowed near the place before 1917) and boys, learn the art of carving directly on the material with a cutter. The pupil prepares the mixture of gancha, and moulds the slab. The master makes a drawing of the ornament on the slab and gives it to the pupil. Training begins by learning the material and instruments. The beginner usually sits between two older pupils who help him from time to time, just as messere Domenico and Francesco Gramacci helped the young Michelangelo in the workshop. The first plate (slab) is replaced by a second, then by a third and a fourth. The given designs become gradually more intricate.

After finishing these courses, the most gifted pupils are sent to architectural faculties of the University, where they come well-equipped with the knowledge of the materials, their technology and technique, as well as with the best creative traditions of their people.

The Western picture of the homes in Central Asia as gloomy with obscure walls and flat roofs, is far from correct. One has but to enter an Uzbek courtyard, look into the rooms, and that impression is soon dispelled. A very highly civilized form of interior, showing artistic taste, will be found. As the people are obliged to hide from the burning sun (and in the past, owing to religious laws were obliged to hide their wives and daughters) much care is taken to make the rooms attractive. It is not the custom to encumber the homes with much furniture. Niches and small closets are built in the walls and the homes are decorated with carpets. For many centuries the master-craftsmen in carving and decorative art have maintained the cultural traditions of interior decoration.

Now that Uzbekistan through its scientific agriculture is becoming a wealthy land, the arts are available to and desired by all. Therefore there is a growing need for first-class masters, architects, decorators and painters. Hence the organization of these workshops for the training of future traditional craftsmen and artists. These are not amateur workshops of a purely aesthetic or historically artistic value. They play an important part in the life of the Uzbek people. They are woven into the pattern of their daily existence.

Naturally, the cruel, grim war with Fascism, the foe of Democracy, could not fail to make itself felt in the life of far-off Uzbekistan, whose people are giving all their strength to gain victory. But nothing can stem the cultural development of the people. In the concentrated faces of the little boys and girls at the workshops of Shir-Dor, in their love for labour and art, we see the reflection of the encouraging future, which will be shaped by all these people, who revive and develop the best traditions of the great folk-art of their ancestors.

Reviews

KOUROI : a study of the development of the Greek kouros from the late seventh to the early fifth century B.C. *By* GISELA M. A. RICHTER with the cooperation of IRMA A. RICHTER. Two hundred and eight photographs by Gerard M. Young. *Oxford University Press : New York*, 1942. *Frontispiece, pp.* XXI *and* 428 *including* 483 *figures on* 135 *plates.* 15 *dollars.*

It was with reference to the kouroi that M. Deonna wrote some twenty years ago ' avec un seul thème on pourrait écrire l'histoire entière de l'art grec ', for in the evolution from the stiff formalized figures of the early examples of this type to the greater freedom and naturalism of the latest ones we see the Greek sculptor acquiring that knowledge of the structure of the human figure and the mastery over his material that opens the way to the achievements of the fifth and fourth centuries. It is this process, whereby an highly conventionalized art form is modified by knowledge and observation until naturalism is achieved, that Miss Richter sets out to study, and she claims for it the deepest significance for Greek and European art. ' Within one hundred years ', she says, ' the Greeks from their more primitive beginnings mastered the rendering of the anatomical structure, whereas the Egyptians in two thousand and more years show no development along those lines. . . . It would be difficult to date an Egyptian statue merely from the knowledge of anatomy displayed '. It is in the kouros type that Miss Richter sees ' the laboratory, so to speak, in which the Greek sculptor worked out this naturalistic art. Its careful analysis is therefore infinitely important '.

The present day interest in archaic art and appreciation of its intrinsic worth owes much, not only to the greater attention which it has received from scholars, but also to the tendency in modern art, and not least in sculpture, to turn away from naturalistic representation and to stress the part played by formal elements of pattern and design. The early artists who made the kouroi might be said to face the problem in reverse ; whereas the modern artist has behind him a long tradition of naturalism, the early Greek is working within the limits of a convention and technique which ' compel him to use a language governed by an order as precise and exacting as the rhythm of the most strictly metrical verse ' as Mr Payne admirably expressed it. As a result, in his efforts to achieve within this framework greater truth in the expression of natural form, the early artist reveals in his work a freshness and a vivid quality very remote from the dull facility of the mechanical Roman copies that have made the ' antique ' seem to many synonymous with the lifeless.

Miss Richter was led to undertake this detailed study of the kouroi through the acquisition a few years ago by the Metropolitan Museum of Art of a fine example of an early kouros or ' archaic Apollo ', as these figures used to be called. The frontispiece of this volume, showing a red-figured vase in the British Museum, where Apollo appears in a kouros form, bears witness that the older name may be justified in some cases, but it has long been recognized that the type is of far wider application. In pursuance of her aim of providing what might be described as a key series for the development of the whole of archaic Greek sculpture the author selects for detailed examination about 150 kouroi, which include the majority of extant examples, together with some statuettes. She divides them into six groups according to the anatomical knowledge which they

display, both in general structure and in the smallest details, such as the positioning and treatment of the eye and ear, the indication of the muscles or of the boundary of the thorax. The illustration of practically every kouros from back, front and side, and the inclusion of an anatomical plate of the male form make it easy to follow the detailed descriptions. This liberal illustration is a valuable feature of the book, and in the actual photography Mr Young reveals the same skill that made his work in Payne's ' Archaic Sculpture from the Acropolis ' so notable. Miss Richter's six groups, each one of which is named from the best preserved kouros or kouroi with a known provenance included in it, are as follows :—

Sounion Group, *c.* 615–590 B.C.
Orchomenos–Thera Group, *c.* 590–570 B.C.
Tenea–Volomandra Group, *c.* 575–550 B.C.
Melos Group, *c.* 555–540 B.C.
Anavysos–Ptoon 12 Group, *c.* 540–515 B.C.
Ptoon 20 Group, *c.* 515–485 B.C.

While absolute precision of dating for particular statues is scarcely attainable, the general sequence established by this method is doubtless fairly accurate. It corresponds to the dates generally assigned to the major works in the groups, but it must be remembered that such dating has been mainly determined by analogous, if less restricted, considerations of style and development. The external evidence, which the author examines for each group, is necessarily small and is mainly drawn from similarities in the figures of vase painting or of sculpture from buildings for which approximate dates can be established. It is noteworthy that such scraps of external evidence as can be found appear nowhere to conflict with Miss Richter's scheme. Apart from the larger issues the value of Miss Richter's researches and her method may be illustrated from her remarks refuting the suggestion that the recently discovered kouros from Anavysos is the work of a forger. ' It seems unlikely that a forger would have had enough detailed knowledge of the development of the kouros type to carve, for instance, the forearms in this transitional form . . . to omit the attachment of the sterno-mastoids to the sternum, resulting in a continuous groove above the clavicles ; to omit the indication of the swelling of the trapezium ; and to place the left flank slightly forward and higher than the right, instead of level with the right as in the earlier periods, or lower than the right or supporting leg, as in the later periods and in nature '.

Miss Richter is of course well aware of the main objection that may be brought against her classification, viz. that it takes no account of attempts to distinguish local schools in early Greek sculpture, and boldly grasps the nettle by suggesting that the free intercourse between artists, and their frequent movement from place to place in the execution of commissions, tended to obliterate local characteristics. There is indeed good evidence for this freedom of movement, but whether the conclusion, which the author draws from it can be fully justified may give rise to some doubt. ' As a result of our findings ', she says, ' we suggest that regional distinctions became merged in a common progression '. Yet admissions have to be made—' The broad divisions of East and West indeed remain. One can distinguish the soft fleshy kouroi of Asia Minor and Samos from the harder, more athletic versions of Argos ; and when there are a number of examples, as for instance from Attica at certain periods, it is possible, perhaps, to segregate the Attic statues '. The fact that these broad divisions of style are not reflected in the author's groups tends to rob them of organic unity. Thus in the Sounion group the New York kouros gives a very different impression in its general stylistic effect from

the famous Delphi figures of Kleobis and Biton, and the same is true of the Dipylon head and the head from the Ptoan sanctuary (Athens Nat. Mus. no. 15), which also figure in that class. These considerations do not necessarily vitiate the author's conclusion that common renderings of anatomical details ' help to date rather than to localise a statue ', but they may remind us that we are dealing, not with a uniform series, but with the scanty remains of works produced in widely separated areas, where local conditions may have operated to accelerate or retard innovations. Results must therefore be applied with caution, but this careful examination of the anatomical features of the kouroi is a valuable contribution to the study of archaic Greek sculpture, even if the author's claim ' to present what in some respects is a new picture of ancient Greece ' is thought to be excessive. There are brief introductory chapters on ' the kouros type ', ' the technique ' and ' the forerunners ', where some early statuettes are discussed, including the one recently found at Dreros in Crete, made of hammered bronze plates over a wooden core. A Zeus made by this σφυρήλατον process is mentioned by Pausanias, but only a few small examples have survived. Of the small bronze statuette entered in the British Museum as from Trapezia the author says ' I have not been able to track down a Trapezia in Greece '. The provenance should possibly be Trapezus ; a small marble torso of a kouros, the last figured in this book, comes from the yet more remote Olbia in southern Russia, which was also a Milesian colony. A statuette would be an even more probable import. The admirable fount of type, the quality of the paper and the general standard of production of this book are both a pleasure and a sad reminder of our own war time restrictions. The Oxford University Press, New York, maintains overseas the high standards of its parent body, and I observed only one minute typographical error—on plate CXII, fig. 378 should be fig. 387. G. F. FORSEY.

THE BOOK OF BUCHAN (Jubilee Volume). *Edited by* J. F. TOCHER, *Aberdeen* ; *published by the Buchan Club*, 1943. 21*s*.

No one familiar with the difficulties which have impeded the preparation of this volume will withhold recognition of the enthusiasm and tenacity that have enabled Dr Tocher to achieve its publication under present conditions. It is indeed a monument of its editor's love of Buchan. Although it is the work of two printers in different towns, it shows few traces of its composite origin. Paper, type, illustrations and binding alike are most creditable, when regard is had to the handicaps under which production has laboured. Inevitably the new volume will be compared with the first *Book of Buchan*, which appeared in 1910. No doubt the comparison is unfair ; but it must be stated that the Jubilee volume is a less balanced and less well-arranged book than its predecessor, and that it is marked both by omissions and by redundancies. In particular, medieval studies come off badly. Here surely, for instance, was the opportunity to give to the world an account of the excavation of the Abbey of Deer—the most important archaeological event in Buchan during the interval between the two volumes. Dundarg Castle, where also so much has been learned by the use of the spade, might likewise have secured a corner in the book. Only one medieval building is dealt with, and the long account of that, though valuable in itself and beautifully illustrated, is out of scale. And while there are omissions there are also irrelevances, such as the chapter on the Newton Stone, which is not in Buchan.

For readers of ANTIQUITY, the most important sections will be Professor Childe's chapter on ' The Prehistoric Archaeology of North-East Scotland ', and Professor Low's on ' Our Ancestors '. In the latter, Dr Low gathers up the result of a life-time's intensive study of the bodily framework of the men and women of northeast Scotland from

short-cist times to the present day. It is interesting to note how more decided, since his first pronouncements of forty years ago, has become his conviction that the oldest known racial type in the area has persisted till the present day. ' I have examined modern skulls from Aberdeenshire ', he writes—' short and broad, flattened at the back, with a square face, narrowed orbits, and broad nose—all characteristics typical of our Short Cist Bronze Age Beaker man of almost four thousand years ago '. As to Professor Childe's contribution, it scarcely needs to be said that it displays both the author's mastery of his material and also his ability to sketch the archaeology of a restricted area against the large background of western European prehistory. So far as Scotland is concerned, it is indeed his grand achievement that he has substituted the one term for the other—that he has replaced Antiquarianism, the mere study and classification of relics, by Archaeology, the unravelling of man's past in the long ages for which no written materials are available to guide us. Professor Childe never hesitates to express his own opinion ; and as the evidence upon which his judgment is based cannot of course be set forth within the limits of such an article, it is unavoidable that an impression of fact should sometimes be lent to assertions still debatable. In particular, his conception of a conquest of northern Scotland by Celtic war-lords, to whom he ascribes our stone hill-forts, is beset by grave objections, as I have tried to show elsewhere (*The Province of Mar*, pp. 64–6). Our hill forts can be accounted for better on other grounds. But it is pleasant to note that Professor Childe seems to have revised his former poor opinion of the Iron Age civilization of Scotland.

One or two points of detailed criticism are all that can be permitted here. Surely the affinities of the Craig urn are with Unstan, not Peterborough ware. And the Clinterty short cist is not ' near Cruden Bay ' ; it is on Donside, not even in Buchan ; nor can the rude stone axe found therein be dignified with the term ' polished '.

W. Douglas Simpson.

THE POLITICAL MEETING PLACES OF THE GREEKS. *By* William A. McDonald, ph.d. ; *Baltimore, the Johns Hopkins Press*, and *London, Oxford University Press*, 1943. *pp.* xx, 308 *and* 19 *plates.* 30*s.*

Books on Greek architecture have hitherto dealt mostly with temples and other religious monuments, and little has been done towards the classification of the civic and domestic buildings, which, being less conspicuous, have less appeal to the eye or the imagination. The excavations at Olynthus have recently taught us a good deal about the layout of the residential quarters of a Greek city, and Mr McDonald has now given us the results of an intensive study of one type of civic building. For greater freedom of treatment he has used the title Meeting Places, which will include anything from a roofed hall to an open space like, e.g. the Pnyx. He has done his work with great thoroughness, combining the evidence of literature, epigraphy and excavation. An apology is made for beginning with Crete—it is not known whether Knossos had any Council to advise the king, but if it had, a place can be found where such a body might have met. Similarly at Athens :—if a popular council existed before the time of Solon, it is likely that it met in or near the Prytaneum. A suggestion is made that the Athenian political assembly originally used the *ikria*, those wooden stands in the Agora which were used by spectators of plays, and which are known to have collapsed during the performance of a play in ol.70. Soon after this the assembly was moved to the Pnyx, and the Theatre of Dionysus, in its primitive form, was constructed. It is mere conjecture that these *ikria* were primarily used for political meetings.

The author is on safer ground when he describes meeting-places which can with

certainty be identified in Greece, Magna Graecia, and Asia Minor. The excellent plates, which are an important feature in the volume, shew a variety of types of buildings; some rectangular, mostly with seats on three sides, some of theatre-shape, others a combination of the two, e.g. at Olynthus, which had a large rectangular building with an apsidal end. Some were open to the sky, others roofed, in which case the elaborate arrangement of the pillars was an important detail, as the spaces to be covered without the aid of the arch were considerable. J. F. DOBSON.

THE LADDER OF PROGRESS IN PALESTINE. *By* DR C. C. MCCOWN. *Harper and Brothers*, 1943. *pp.* 387, 54 *plates and* 9 *sketches and plans.* $3.50.

In view of the money spent by the States in excavation in Palestine of recent years it is perhaps well that a survey of the results should be written by an American; for this Dr McCown is well qualified, for he was head of the American School of Oriental Archaeology in Jerusalem for two years (1929–31) and he has himself edited the results of Dr Bade's work at Tell-en-Nasbeh since his death. Starting with the Mousterian remains of Wady-el-Mughara he brings the story down to the Papyri of the sixth and seventh centuries at 'Auja-el-Hafir in the Negeb and to the investigation of Qala'at-er-Rabad built about A.D. 1185 by one of Saladin's Emirs. The arrangement is on the whole by time; we pass from the palaeolithic remains to the building of cities, to the quest for the alphabet, to which Palestine has contributed, with Syria, much light, and then, with rather more attention to locality, to the U.S.A. excavations at Bethshan and Megiddo, and the joint work at Samaria. Round Jerusalem are grouped first certain outlying pieces of work ranging from Shechem in the north, to Bethsur in the south; and then follows the account of both unauthorized and authorized excavations which have done much to clear up the shifting of the site of the city itself, from Davidsburgh on the south end of the eastern hill, to the extended city of today, with its northernmost wall well to the north of the present line, first noticed by Robinson, and then dropped till fresh evidence called attention to it. Professor McCown has been in close touch throughout with Professors Albright and Garstang; and he concludes his book with a very sane chapter on 'What to believe', which disposes of the misuse of archaeological results for dogmatic purposes. M.L.-S.

SAINT ILTUT. *By* GILBERT H. DOBLE. *University of Wales Press Board, Cardiff*, 1944. *pp.* 52. 5*s.*

This is a short study of one of the most famous Welsh Saints of the Dark Ages by an author who has already produced several similar studies in Celtic hagiography. Canon Doble states in his preface that he is using the scientific methods of dealing with the subject discovered and perfected by the Bollandists. The plan as it works out in the case of Saint Iltut is to arrange the available documentary evidence concerning the saint in a general chronological sequence and then to proceed to examine the accretion of data throughout the ages, indicating wherever possible the sources of the material concerned, and the extent to which the various stories have been amalgamated, amplified, rearranged or omitted by different authors. It is significant that while this procedure may be well suited to the hagiographer and to the student of medieval texts, it tends to focus too much attention on such questions as ' who was the author, where did he write and when, and why and what materials had he for his work ' (p. 27), and too little on some of the important things the writer might have said. For example, it may be worth

pointing out when quoting the very earliest extant reference to the saint in the *Vita Samsonis* (probably 7th century)—' Eltut was the most learned of all the Britons in the knowledge of Scripture, both the Old Testament and the New Testament and in every branch of philosophy—poetry and rhetoric, grammar and arithmetic '—that such emphasis on learning seems to have been the special attribute of the early saints such as Iltut and Cadoc and that it may very likely be that these early teachers were inheriting more of the old Romano-British learning than was available to their successors. The need for a rich commentary beyond the analysis of the literary material becomes all the more necessary when we consider the negative deductions drawn from the study of the 12th century *Vita Iltuti* contained in the British Museum MS. Vesp. A. XIV. After providing the reader with a ' summary of this *Life*, translating the more important passages ', Canon Doble proceeds to ask the above-mentioned questions. While he is able to provide perfectly satisfactory answers to them based on internal literary evidence, the reader is reminded at the close that ' it will be seen that the *Vita Iltuti*, except for the glimpses it gives of the church at Llantwit at the beginning of the twelfth century and in the period immediately preceding is of no historical value '.

After a brief mention of the references to Iltut in the Book of Llandâv and by Giraldus Cambrensis in his *Itinerary through Wales*, Canon Doble turns to examine the traces of the saint's cult left in the topography of Wales and Brittany. This section occupies only eight of the fifty or so pages of the book, and is, unfortunately, little more than a brief commentary on a list of names. The reviewer feels that this section is somewhat disappointing, especially when we are led to expect so much more by the promising reference in the preface to the effect that it is recognized more and more today that an exhaustive analysis of Church dedications and of the toponymy of districts connected with the Celtic Saints must go side by side with a careful study of the documents which profess to describe their careers. Actually, Canon Doble could have drawn some important inferences from the distribution of the Iltut dedications on the lines suggested by the reviewer (ANTIQUITY, March 1944). Canon Doble merely notes that ' the *tabulating* of places dedicated to Celtic Saints . . . sometimes reveals facts about their work . . . of which their written *Lives* give us no hint whatever '. Tabulating is not sufficient, these places should be mapped (as Canon Doble has done in several of his other studies) and more important still the maps should be interpreted in the light of archaeological and other distributional evidence. In the case of the cult of St. Iltut we have several interesting instances of his name being found associated with megalithic monuments in both Wales and Brittany. The author mentions these instances but does not comment upon the significance of the association.

It would thus appear that from the point of view of using ' the scientific methods of dealing with the subject discovered and perfected by the Bollandists ', Canon Doble's ' St. Iltut ' is a very sound piece of work, but the methods of the Bollandists leave much to be desired in light of modern scholarship. The results in this case tend to fractionate the narrative—a feature which does not help to build up a centralized theme. Further study of the Celtic Saints demands a co-operative effort involving the scholarship of persons trained to deal with textual matters ; those able to deal with hagiography ; the place-name specialist ; the archaeologist and the historical geographer. The book is well produced and shows few signs of being a wartime production. It is also free from misprints and it is obvious that great care has been taken with its production.

We wish that Canon Doble would collect all his materials and publish the whole between two covers, for the convenience of students, for whom the pamphlets are not the best form of reference. E. G. BOWEN.

ROMAN VERGIL. *By* W. F. JACKSON KNIGHT. *Faber and Faber*, 1944. *pp.* VIII, 348. 15*s.*

Mr Knight has now followed up his earlier studies with a full-scale work on Virgil; it is of interest not only to the classical scholar but to all for whom the working of a great poet's mind bears its own universal message. The book is, however, far more than a summary and re-statement of the author's previous conclusions. Mr Knight possesses an imaginative approach, subtlety of observation, sensitive understanding of sound and rhythm, and a deep knowledge of the text of Virgil; all these qualities, aided by familiarity with a wide range of Virgilian literature from many countries, have enabled him to produce a modern Guide to Virgil of exceptional scope. He deals with the poet's philosophic, religious, and literary background; his diction, expression, and style; his syntax and metre; his artistic method; his *Weltanschauung* and its significance for his own world and for our own. If we are to attain even faintly near to a true vision of 'Virgil', Dante's guide and master, all these complex aspects of study, which are themselves interdependent and complementary, must each be given separate consideration, and the whole must then be welded together. It is Mr Knight's great merit that he has realized this.

The main value of the book lies in the penetration with which the author has used Virgil to illustrate Virgil. He shows us the poet's mind, absorbing into itself, often unconsciously, impressions derived not only from contemporary life, thought, and experience, but from all the inherited literary tradition of Rome and Greece. Even enlightened commentators have been slow to see the fallacy, and the meanness, of the attitude according to which Virgil is said to 'copy Homer' or to 'copy Lucretius' in this or that passage; and Mr Knight is at his best in interpreting the mental processes that lie behind such reminiscence, which is really neither copying nor borrowing, but independent fusion, transmutation, and creation. The method makes possible a re-examination of many of the famous Virgilian phrases and many problems of Virgilian thought, and the discovery of new truths and new beauties in them; and thus, by a wider extension, leads to a clearer understanding of the pattern of Virgil's art, and of the apocalyptic majesty of the Latin language in his mouth. Linguistic and metrical discussion supports and widens Mr Knight's conclusions.

But the method is not always safe; such a book cannot help being highly subjective, and the dangers of subjectivity are increased in a writer of Mr Knight's temperament, trend, and interests. He presents a psychological study of Virgil which must be accepted with the greatest possible reserve; it is a private, personal picture and must be plainly understood as such. This warning is needed if the non-professional reader is to be saved from thinking that he is being shown objective truths. The book abounds in observations which illuminate what has hitherto been obscure, or which deepen and enrich already familiar colours; but it also contains many hazardous statements and theories which rest upon very insubstantial evidence. No one yet knows enough Latin to be justified in making or believing many of the inferences which Mr Knight has made about Virgil. The layman should and will read the book; but he must go warily, and not accept all that he is told in it, or assume, as he might well do, that Virgil is own brother under the skin to James Joyce or Mr Ezra Pound. The classical scholar will not need this warning; but he will be uneasy at the necessity for it, and his misgivings will be increased by a surprising number of factual inaccuracies and unscholarly deductions which should never have found their way into a work of this kind. Apart from this, the book needs much revision; there are many needless and irritating repetitions, far too much obscure and mannered English, too much overloading with extraneous opinions

and somewhat pretentious learning, too many misprints, too peculiar an index. Even the title is wrong: the form *Vergil* is neither English nor Latin. If the book were not of some significance for Virgilian studies, its misleading aspects would be less dangerous; as it is, they cannot be ignored and ought to be stressed. R. G. AUSTIN.

[NOTE: It is proper to state here that the present reviewer has prepared a more detailed criticism of Mr Knight's work for a forthcoming issue of the *Classical Review*.]

EXCAVATIONS AT OLYNTHUS, part X. *By* DAVID M. ROBINSON. *Baltimore: the Johns Hopkins Press. London: Humphrey Milford, Oxford University Press.* 1941. *pp.* XXVIII, 594, 172 *plates.* £6.

To have produced a volume of this size and quality under the shadow of impending war is a remarkable achievement; two-thirds of the cost have been borne by the author himself, who has already contributed on a princely scale to the cost of the excavations. Professor Robinson's reputation for thoroughness and attention to detail was well established by the previous volumes in the series, and the same features are to be found in the present volume. The importance of the excavations, undertaken in the course of four expeditions between 1928 and 1938, lies not so much in the rarity and beauty of the objects discovered as in the fact that Olynthus is the only city with a residential plan which has yet been unearthed on the mainland of Greece, and the only city of the 5th and 4th centuries which has anywhere been dug up with its houses. Since the city was destroyed in 348 B.C. there is a definite *terminus ante quem* for the dating. Volume X deals with metal and minor miscellaneous objects, often unimportant individually, but interesting as showing the scope of the metal industries of the place and as throwing light on the life of the inhabitants. Thus, the amount of leaden objects discovered is remarkable, and so is the fact that in every house excavated there was found at least one fish-hook. These, in addition to the numerous netting needles and lead sinkers, point to fishing as a popular occupation. A few objects of gold and silver are included, but the majority of the metal finds were utility objects—weapons, tools, domestic and toilet articles. It may be presumed that most of the larger objects of intrinsic or artistic value were carried off when the city was looted by the Macedonians. A concordance of 'proveniences' gives as far as possible the exact locality in which each of 2600 objects was discovered. The last plate is a two-page map of the excavations, drawn by Dr Sarah Freeman. J. F. DOBSON.